

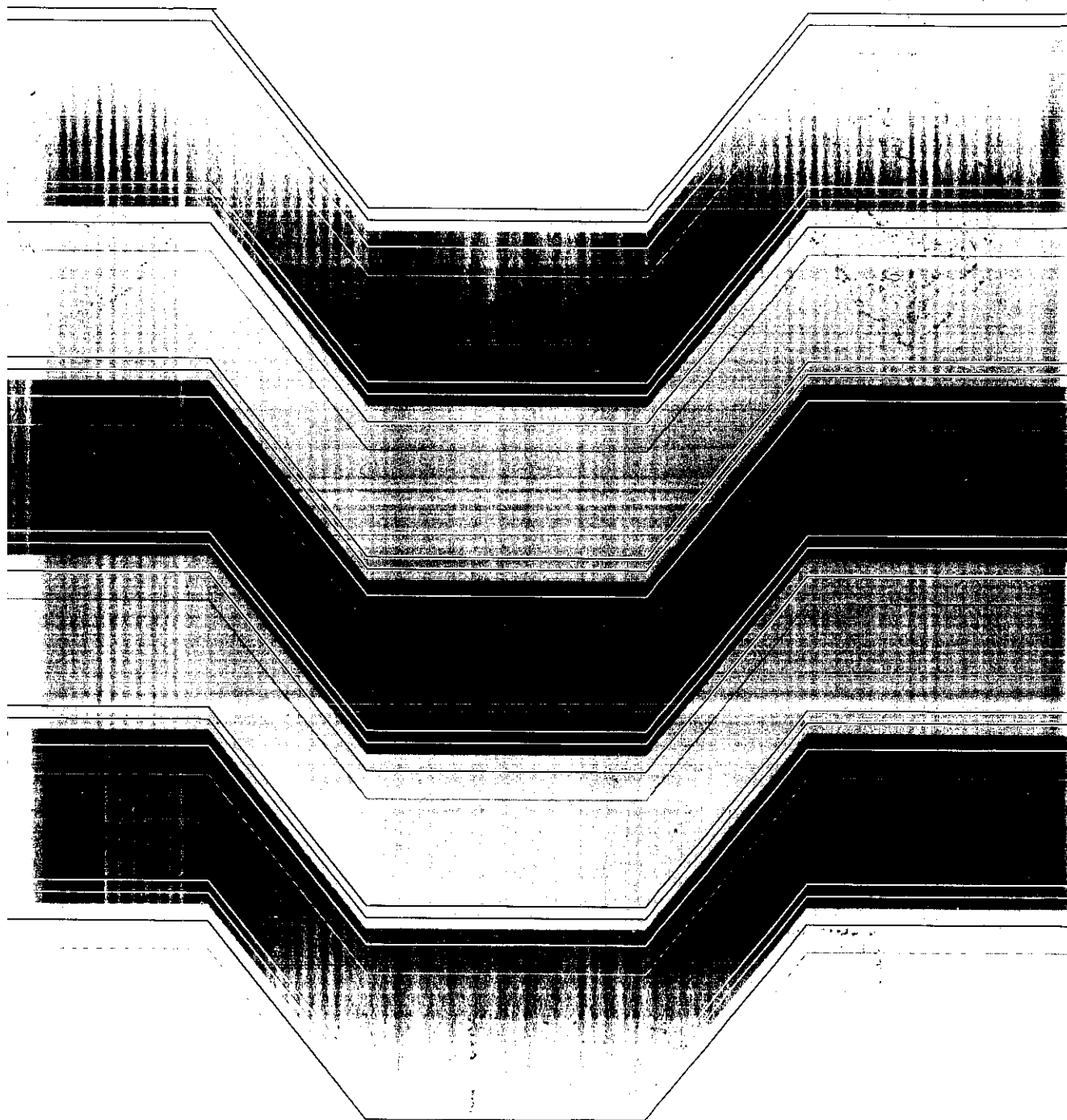
SHARP®

LASER PRINTER

MODEL

JX-9500E
JX-9500H

OPERATION MANUAL / PROGRAMMING MANUAL

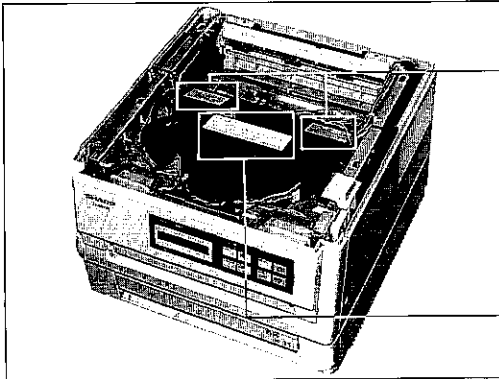


At the production line, the output power of the scanner unit is adjusted to 0.51 MILLI-WATT PLUS 20 PCTS and is maintained constant by the operation of the Automatic Power Control (APC).

Even if the APC circuit fails in operation for some reason, the maximum output power will only be 15 MILLI-WATT 0.1 MICRO-SEC. Giving an accessible emission level of 42 MICRO-WATT which is still less than the limit of CLASS-1 laser product.

Caution

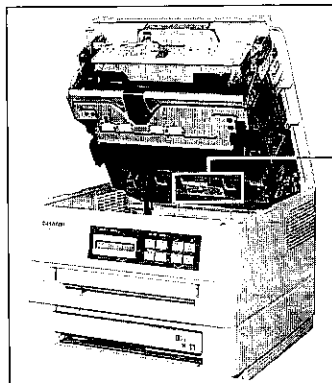
This product contains a low power laser device. To ensure continued safety do not remove any cover or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.



| | |
|------------------------------|---------------------------------|
| NEVER OPEN THE COVER | NE JAMAIS OUVRI LE COUVERCLE |
| ABDECKUNG NIE MALS ÖFFNEN | NUNCA ABRA LA TAPA |



DANGER
DO NOT OPEN THE COVER.
CLASS 3b INVISIBLE LASER
RADIATION EXISTS INSIDE THIS UNIT.



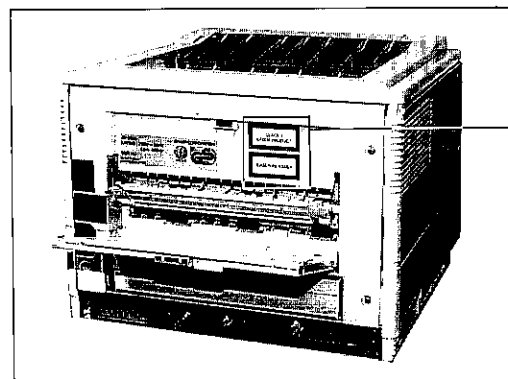
The foregoing is applicable only to the 220V model and 240V model.

| | | | | |
|---|--|---|---|--|
| VARNING OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR URKOPPLAD. STRÅLEN ÄR FARLIG. | CAUTION INVISIBLE LASER RADIATION WHEN INTERLOCKS DEFEATED AND TONER-DEVELOPER CARTRIDGE REMOVED. | VORSICHT UNSICHTBARE LASERSTRAHLUNG WENN INTERLOCK ÜBERBRÜCKT IST UND TONER-SOWIE ENTWICKLUNGSEINHEIT ENTFERNET SIND. | ADVARSEL USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKER- HEDSAPPARATENE ER UDE AF FUNKTION. UDSGÅ UDSÆTTELSE FOR STRÅLING. | VARO! AVATTAESSA JA SUOJALUKITUS OHIETTAESSA OLET ALITTIINA NÄKYMÄTTÖMÄLLE LASER- SÄTEIL YLLE. ÄLÄ KATSO SÄTEESSEEN. |
|---|--|---|---|--|

CLASS 1
LASER PRODUCT

LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

LASER KLASSE 1



The foregoing is applicable only to the 220V model and 240V model.

VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

VARNING – OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

THE EQUIPMENT SHOULD BE INSTALLED NEAR AN ACCESSIBLE SOCKET OUTLET FOR EASY DISCONNECTION.



CAUTION

- Do not touch the photoconductive drum. Scratches or smudges on the drum will cause dirty printouts.
- The fusing unit is hot. Exercise care when inspecting this area.
- When using the power switch, do not switch the Laser Printer rapidly on and off. After turning the Laser Printer off, wait 10 to 15 seconds before turning it back on.

Beim Anschalten dieses Gerätes an Datenverarbeitungsanlagen ist sicherzustellen, daß die Gesamtanlage den jeweiligen technischen Vorschriften entspricht.

This apparatus complies with the requirements of EN 55014, 02.1987 and BS 800:1988.

Dieses Gerät stimmt mit den Bedingungen der EN 55014, 02.1987 überein.

Cet appareil répond aux spécifications de la EN 55014, 02.1987.

Dit apparaat voldoet aan de vereiste EN 55014, 02.1987.

Apparatet opfylder kravene i EN 55014, 02.1987.

Questo apparecchio è stato prodotto in conformità alle EN 55014, 02.1987.

Αύτή ή συσκευή τηρεί τις προδιαγραφές της EN 55014, 02.1987.


Este aparelho responde às especificações da EN 55014, 02.1987.

Este aparato cumple las especificaciones de la EN 55014, 02.1987.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

| | |
|-------------------|---------|
| GREEN-AND-YELLOW: | Earth |
| BLUE: | Neutral |
| BROWN: | Live |

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows. The wire which is coloured **GREEN-AND-YELLOW** must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol  or green-and-yellow.

The wire which is coloured **BLUE** must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured **BROWN** must be connected to the terminal which is marked with the letter L or coloured red.

This apparatus must be protected by a 13A fuse in the mains plug or distribution board.

"WARNING: THIS APPARATUS MUST BE EARTHED"

TRADEMARK ACKNOWLEDGEMENTS

Diablo 630/630 ECS is a trademark of Diablo Systems, Inc.

Epson FX-80 is a trademark of Epson America.

IBM Graphics Printer and IBM Proprinter are trademarks of International Business Machines Corporation.

HP LaserJet series II is a trademark of Hewlett-Packard, Inc.

MS-DOS is a trademark of Microsoft Corporation.

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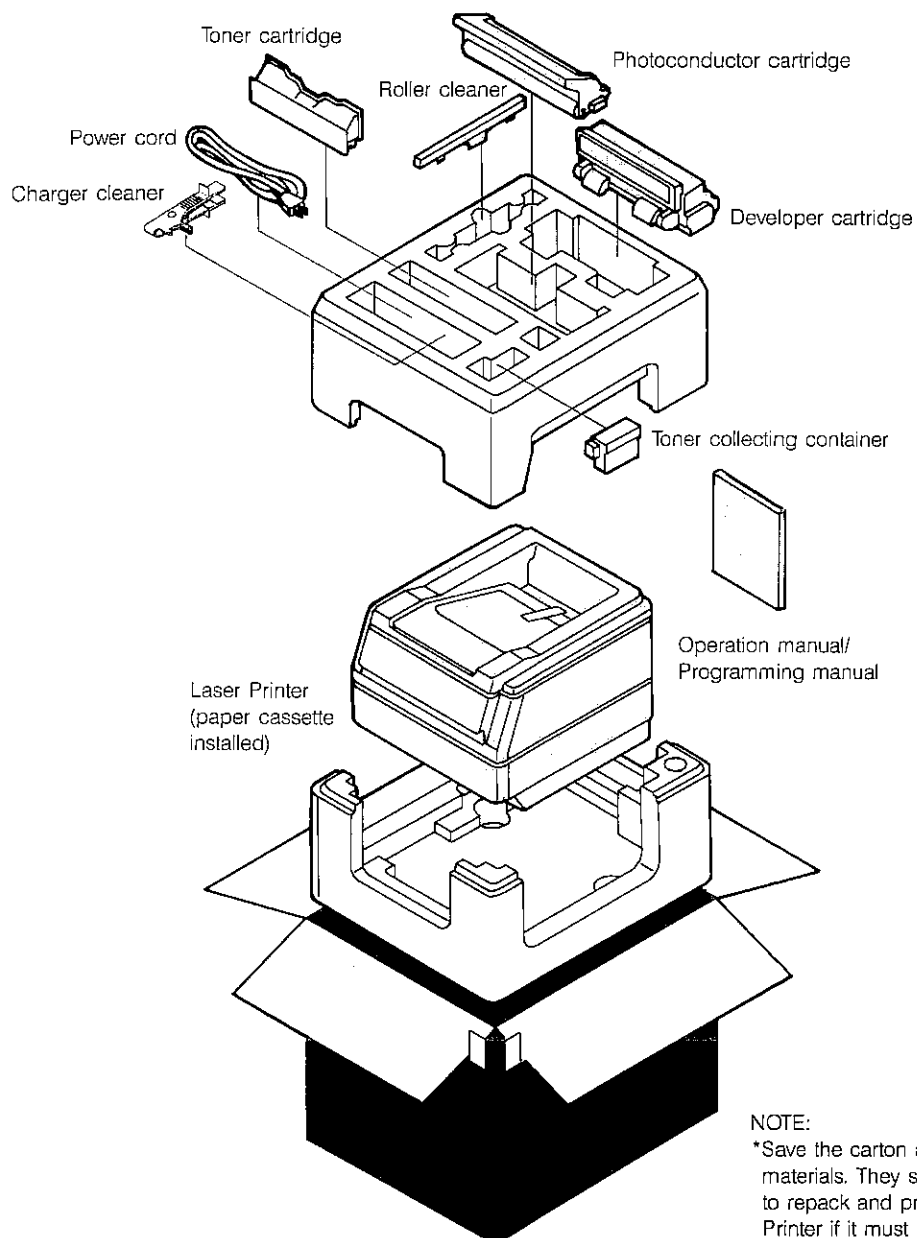
PROGRAMMING

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1. INTRODUCTION

UNPACKING

Check that your Laser Printer comes with the items shown below:



NOTE:

*Save the carton and packing materials. They should be used to repack and protect the Laser Printer if it must be shipped for servicing.

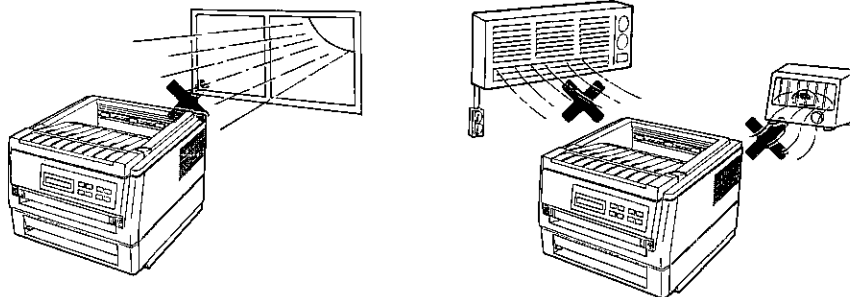
*The charger cleaner is used for maintenance. Store them in suitable places.

A WORD ON INSTALLATION

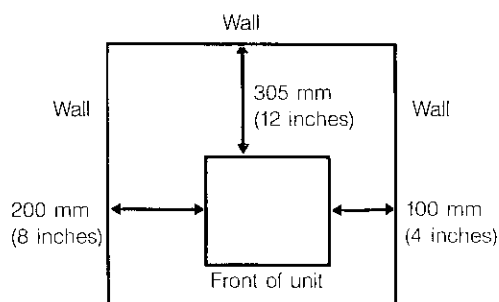
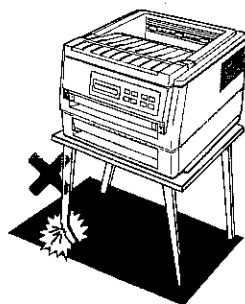
INSTALLATION

Improper installation may damage the Laser Printer. Please note the following during initial installation and whenever the Laser Printer has been moved.

1. Be sure to use the rated voltage from a properly grounded wall outlet only.
2. Do not install the Laser Printer in areas that are:
 - damp or humid,
 - exposed to direct sunlight,
 - extremely dusty or smoky,
 - poorly ventilated,
 - subject to extreme temperature or humidity changes, e.g. near an air conditioner or heater.



3. Place the Laser Printer on a firm, level table or desk with enough space to allow you to insert the paper cassette and to manually feed the paper.
4. To ensure proper operation and ventilation, leave at least as much space on each side as shown below.



PAPER TYPES AND SIZES

Standard Papers

● Automatic Feeding from the Paper Cassette

Sizes

| | | |
|---|--|--|
| <div>B5</div> <div>182 × 257 mm</div> | <div>A4</div> <div>210 × 297 mm</div> | <div>Invoice</div> <div>8-1/2" × 5-1/2"</div> |
| <div>Letter</div> <div>8-1/2" × 11"</div> | <div>Legal</div> <div>8-1/2" × 14"</div> | <div>Executive</div> <div>7-1/4" × 10-1/2"</div> |

Weights

| | | |
|--|---|--|
| <div>60 g/m²</div> <div>16 lbs.</div> | ↔ | <div>80 g/m²</div> <div>21 lbs.</div> |
|--|---|--|

*The A4 size cassette is a standard accessory on your Laser Printer. Cassettes in other sizes are available as options.

● Manual Feeding

Sizes Same as automatic feeding.

Weights

| | | |
|--|---|---|
| <div>60 g/m²</div> <div>16 lbs.</div> | ↔ | <div>130 g/m²</div> <div>34 lbs.</div> |
|--|---|---|

*Papers with weights from 80 g/m² to 130 g/m² (21 lbs. to 34 lbs.) can be used only with face up output.

*A4 (210×297mm) is the maximum size for paper weighing more than 105 g/m² (28 lbs.).

Envelopes

● Manual Feeding

| | | |
|---------|--|----------------------------------|
| Sizes | International DL 110 × 220 mm | International C5 162 × 229 mm |
| | Commercial 10 (Business) 4-1/8" × 9-1/2" | Monarch 3-7/8" × 7-1/2" |
| <hr/> | | |
| Weights | 60 g/m ² 16 lbs. | 90 g/m ² 24 lbs. |
| | ↔ | |

* Envelopes can be used only with face up output.

* An optional envelope feeder is available for continuous feeding of up to 40 envelopes.

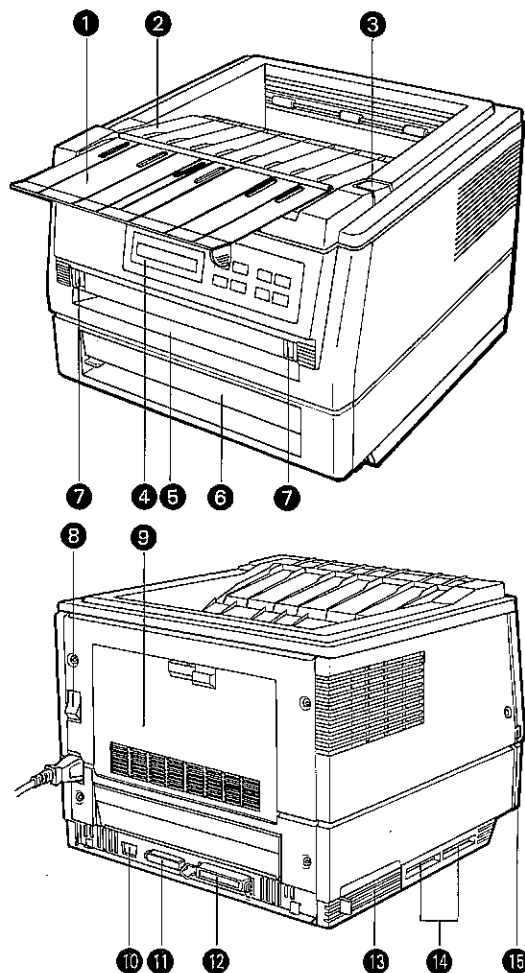
* Do not use envelopes with metal tabs, snaps, windows, strings, or other attachments, as it may result in damage to the Laser Printer.

Special Papers

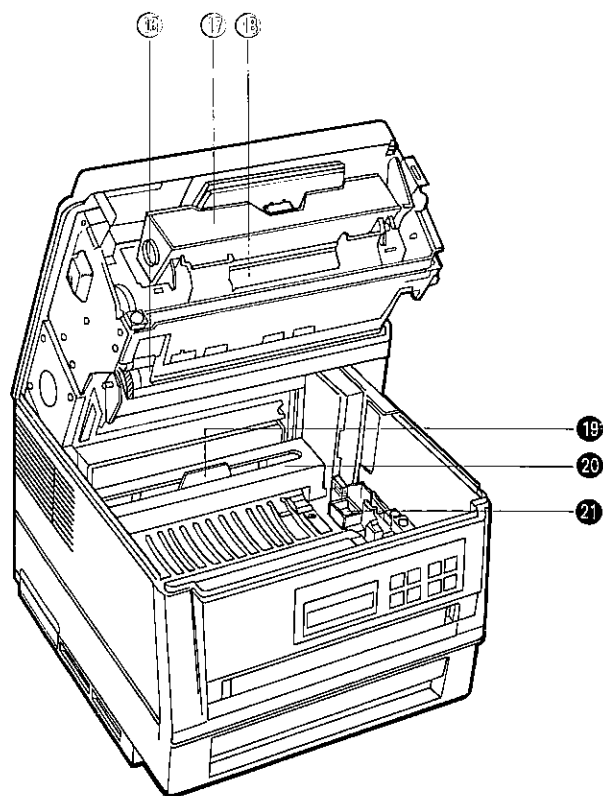
| | | |
|-------|----------------------|--|
| | Transparency film | (manual feed and face up output only) |
| <hr/> | | |
| Sizes | A4 210 × 297 mm | Letter (8-1/2" × 11") |
| | ↔ | |

* Special papers can be used only with face up output.

PART NAMES AND FUNCTIONS



- ① Extension Tray**
Fold out to receive legal size paper.
- ② Face Down Tray**
Collects the printed paper face down.
- ③ Upper Unit Release Button**
Press to open the Laser Printer.
- ④ Operation Panel**
Contains the indicator lamps, operation keys, and display.
- ⑤ Manual Feed Slot**
Special papers, envelopes, and paper not in the cassette can be fed through the manual feed slot.
- ⑥ Paper Cassette**
Holds up to 250 sheets of paper.
- ⑦ Envelope Feeder Mounting Holes**
Insert the hooks here to install optional envelope feeder.



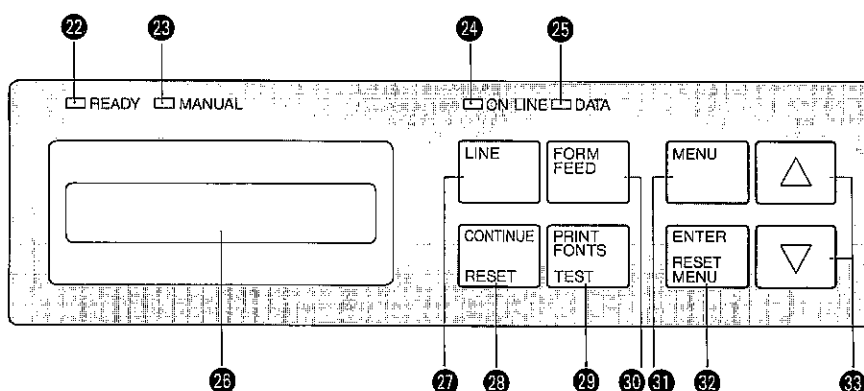
- 8 Power Switch**
Press to turn the Laser Printer power on and off.
- 9 Face Up Tray**
Special paper and envelopes fed through the manual feed slot are output here.
- 10 Connector for Optional Second Cassette Unit**
- 11 RS-232C Serial Interface**
- 12 Centronics Parallel Interface**
- 13 Expansion Memory Slot Cover**
Open the cover to insert optional Expansion Memory.
- 14 Font Card Slots (A, B)**
Accept optional font cards which provide additional font selection.
- 15 Connector for Optional Envelope Feeder**
- 16 Photoconductor Cartridge**
- 17 Toner Cartridge**
- 18 Developer Cartridge**
- 19 Roller Cleaner**
- 20 Fusing Unit**
- 21 Toner Collecting Container**

OPERATION PANEL

The operation panel is used to set the Laser Printer off-line for direct operations, such as setting the menu items and executing self-tests.

Note the following when using the operation panel:

- Set the printer off-line before using the keys.
- Some keys have several functions, which are selected by the duration of time the key is pressed. Be sure to check the functions on the display.



- 22 READY lamp (green)**
Remains lit when the Laser Printer is on and ready to print. Blinks while receiving data on-line, is off during warm-up, and turns off when an error occurs.
- 23 MANUAL lamp (orange)**
Lights when the manual feed mode is selected.
- 24 ON LINE lamp (green)**
Lights when the Laser Printer is set on-line and ready to receive data from the computer. If the LINE key is pressed during printing to set the Laser Printer off-line, this lamp blinks until the page being printed is fed out, indicating that the Laser Printer cannot be set to off-line.
- 25 DATA lamp (orange)**
Lights when the print buffer contains data to print. Blinks if the Laser Printer has waited more than 5 seconds for a form feed command and a partial page remains in the printer buffer.
- 26 Display**
The 16-character liquid crystal display indicates the following:
 - Status messages
 - Menu settings (See SETTING THE MENU ITEMS, page 25.)
 - Error conditions (See PRINTER TROUBLE?, page 89.)
 - Service messages (See SERVICE REQUIRED, page 77.)
- 27 LINE key**
Used to alternately set the printer on-line and off-line. Also used to set the printer on-line after performing the self tests or setting the menu items. The Laser Printer can receive data from the computer when on-line (ON LINE lamp on) and cannot receive data from the computer when off-line (ON LINE lamp off).

28 CONTINUE/RESET key

Used to select the following two functions:

CONTINUE: Clears most errors (see page 89).

Used for the following operations:

- To set the printer on-line from the off-line state after an error.
- To cancel printer self-tests and set the printer on-line.
- To set the printer on-line from the menu setting mode.
- To continue printing with the current paper source even when the printer requests a different paper size (or envelope type).

RESET: Resets the Laser Printer to ensure that the panel default settings (the menu settings selected by the user) are available.

Includes the following operation:

- In HP LaserJet series II emulation, temporary soft fonts and temporary macros are cleared.
- Stored page data is cleared.

29 PRINT FONTS/TEST key

Used to select the following three functions:

PRINT FONTS: Prints out available fonts.

SELF TEST #1: Prints the settings of the various menu items.

SELF TEST #2: Starts test pattern printing.

30 FORM FEED key

Prints data in the print buffer when the printer is off-line. This key is not effective when the printer is on-line.

31 MENU key

Used to select the following two functions:

PRINTING MENU: Enters the Printing Menu mode. (See SETTING THE MENU ITEMS, page 27.)

CONFIGURATION MENU: Enters the Configuration Menu mode. (See SETTING THE MENU ITEMS, page 27.)

32 ENTER/RESET MENU key

Used to select the following two functions:

ENTER: Specifies the menu values to be saved as panel default settings.

RESET MENU: Initializes all items in the Printing Menu to the factory default settings.

Also resets the following:

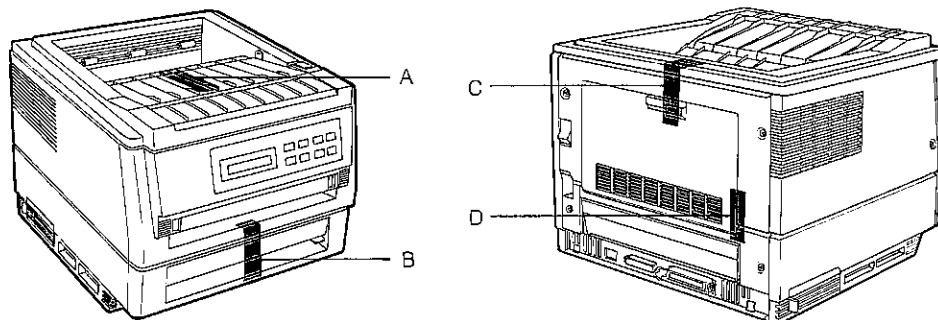
- In HP LaserJet series II emulation, temporary soft fonts and temporary macros are cleared.
- Stored page data is cleared.

33 Δ and ∇ keys

Used to select values for the menu items. Each time the keys are pressed the menu values change.

2. SETTING UP

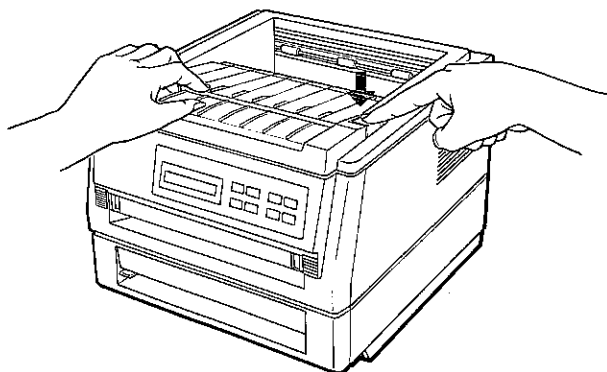
- Remove the Laser Printer from the plastic bag.
Remove securing tape (A), (B) and (C), and packing material (D).



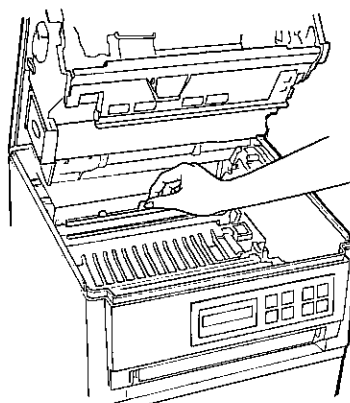
INSTALLING THE SUPPLIES

Installing the Roller Cleaner and the Toner Collecting Container

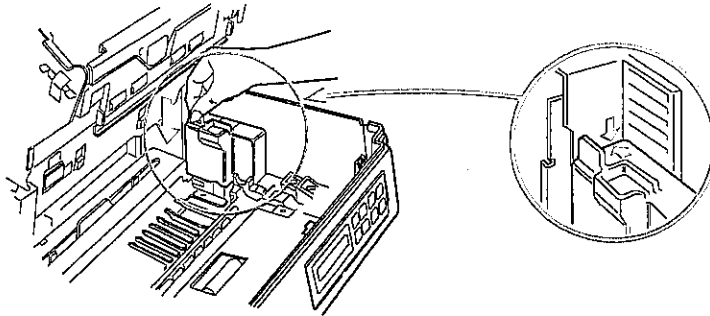
1. Hold the top of the Laser Printer and press the **upper unit release button** to open it.



2. Remove the roller cleaner from its plastic bag.
3. Install the roller cleaner on top of the fusing unit.

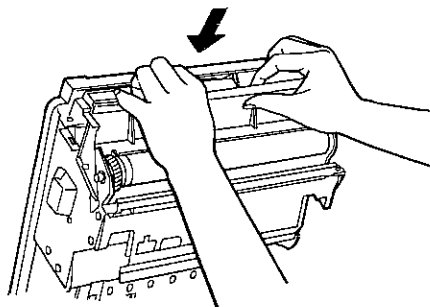


4. Firmly insert the toner collecting container to the position of the arrow.

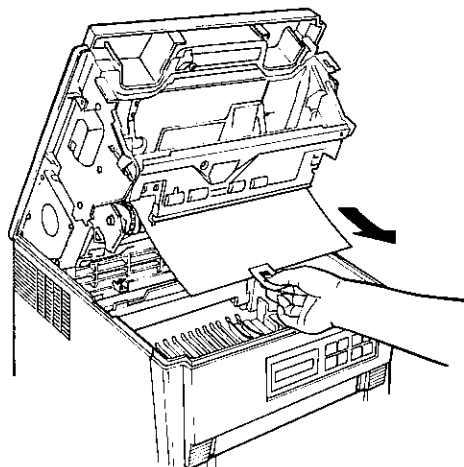


Installing the Photoconductor Cartridge

1. Remove the photoconductor cartridge from its plastic bag. BE CAREFUL NOT TO TOUCH THE PHOTOCONDUCTIVE DRUM.
2. With the photoconductive drum facing down, fully insert the photoconductor cartridge into the Laser Printer, sliding it along the guides.

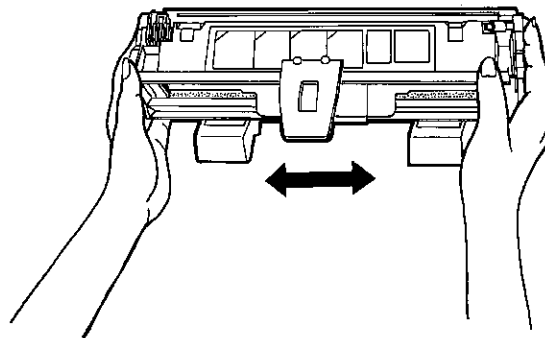


3. Hold the upper unit and pull the green tab to remove the protective sheet. Be sure not to leave any torn pieces in the Laser Printer.

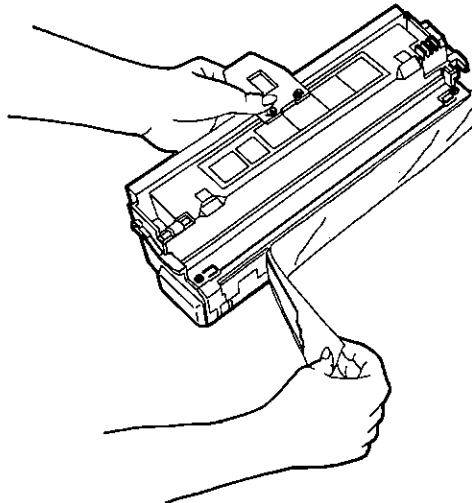


Installing the Developer Cartridge

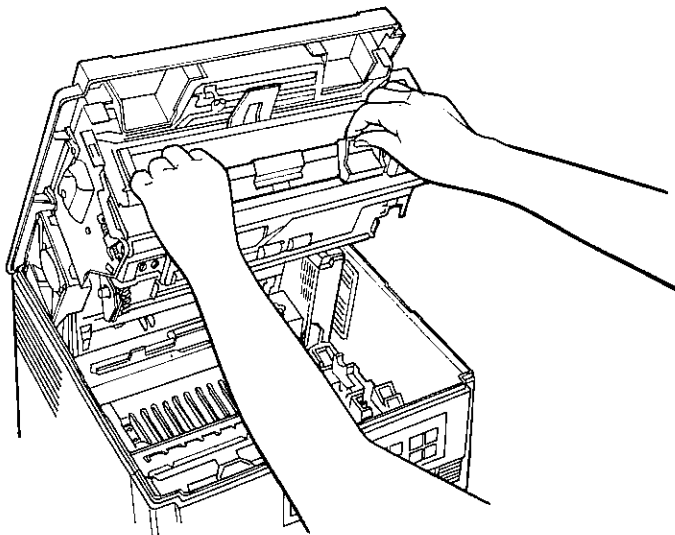
1. Remove the developer cartridge from its plastic bag, taking care not to damage it.
2. Remove the protective plastic cover.
3. Shake the developer cartridge vigorously in a horizontal direction four or five times.



4. Place the developer cartridge on a level surface, hold it in place, and remove the covering material.
 - Be careful not to touch the developer roller.
 - Do not remove the sealing plate on the other side of the developer cartridge.

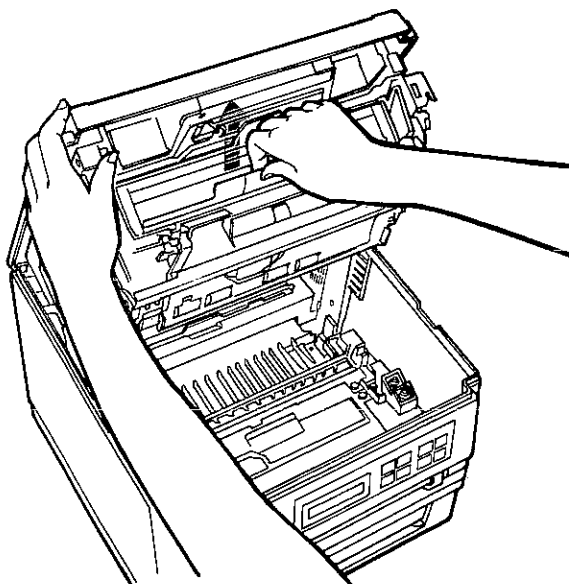


5. Press the levers on the developer cartridge with both hands and slide it into the Laser Printer along the guides.



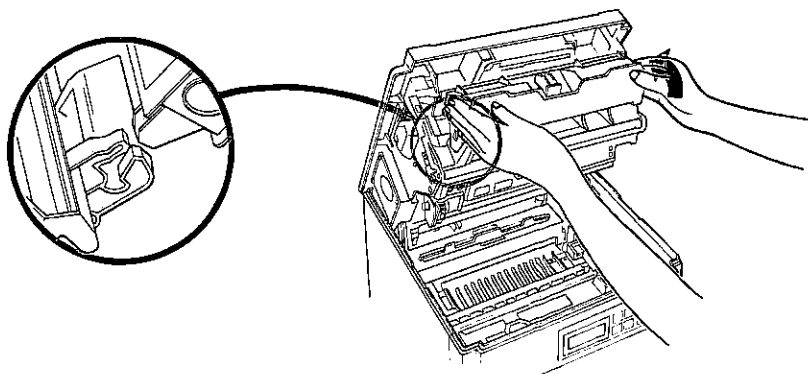
SETTING UP

6. Remove the tape securing the sealing plate and pull out the sealing plate.



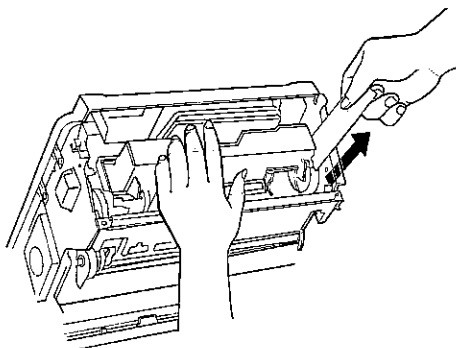
Installing the Toner Cartridge

1. Shake the toner cartridge horizontally four or five times.
2. Align the toner cartridge slots with the developer cartridge hooks, and rotate until it clicks and is securely attached.



3. Hold the toner cartridge and pull out the sealing tape from the toner cartridge.

With the upper unit in a fully upright position, tap on the toner cartridge four or five times to release all the toner into the developer cartridge.



4. Close the Laser Printer.

CAUTION

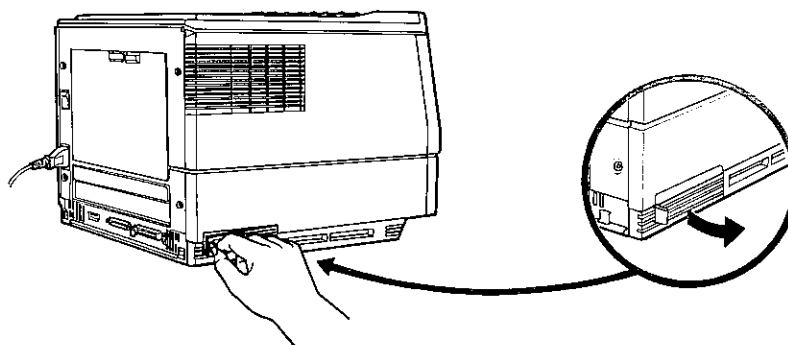
There are fuses in the photoconductor unit, the developer unit and the toner collecting container. Do not turn on the Laser Printer while changing any of the above parts, or the fuses will be blown.

These fuses have a sensing effect and reset the counters for the photoconductor unit, the developer unit or the toner unit.

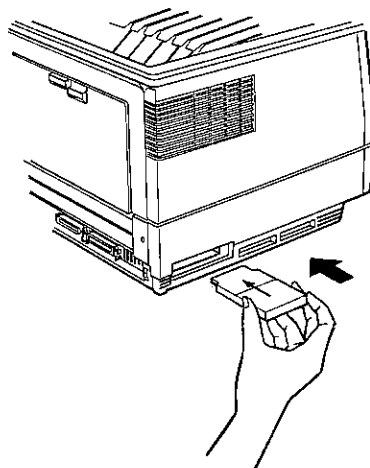
INSTALLING THE EXPANSION MEMORY (OPTIONAL)

The expansion memory is available as an option (see page 94).

1. Turn off the power.
2. Remove the expansion memory cover on the bottom left-hand side of the Laser Printer by pulling the cover tab to the right and out.



3. Insert the expansion memory, with the arrow facing up, all the way into the Laser Printer.



4. Replace the expansion memory cover.
 - If the cover cannot be replaced, the expansion memory may be improperly inserted (upside down).
5. Perform SELF TEST #1 to check that the expansion memory is properly installed (see page 19).

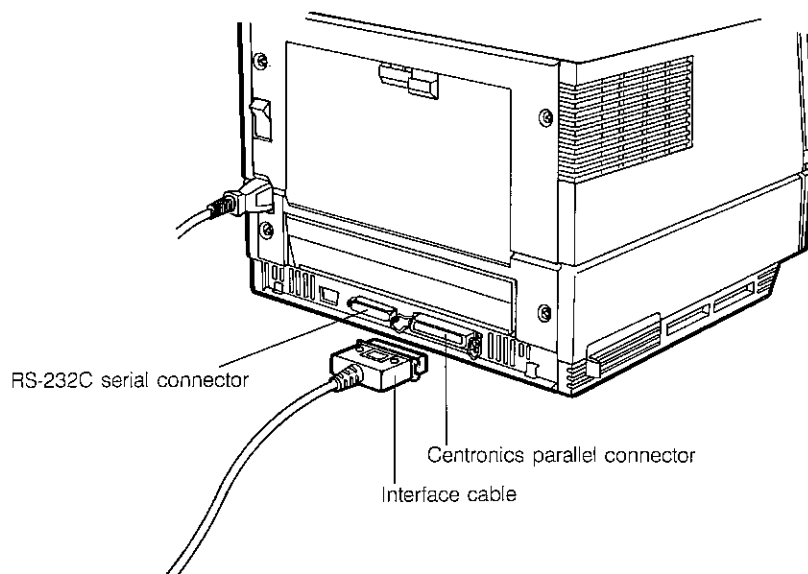
CONNECTING THE INTERFACE CABLE

The Laser Printer is equipped with both a Centronics parallel and a RS-232C serial interface. The Laser Printer has been set at the factory to use the Centronics parallel interface. To set the RS-232C serial interface, see SETTING THE MENU ITEMS, page 46.

NOTE:

A shielded, grounded cable and connector are required to comply with either FCC Class B or VDE 0871 and 0875 requirements.

1. Turn off the power.
2. Remove the protective cover from the desired connector. (Leave the other protective cover in place to prevent accidental contact, or damage from static electricity.)
3. Plug the cable into the connector.

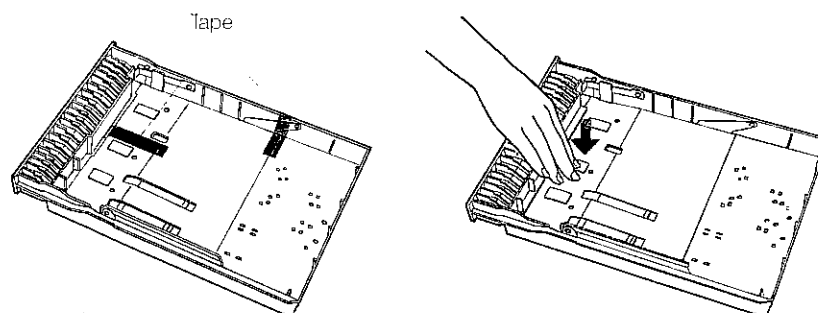


4. Fasten the bail clips for the parallel connector or secure the two screws for the serial connector.

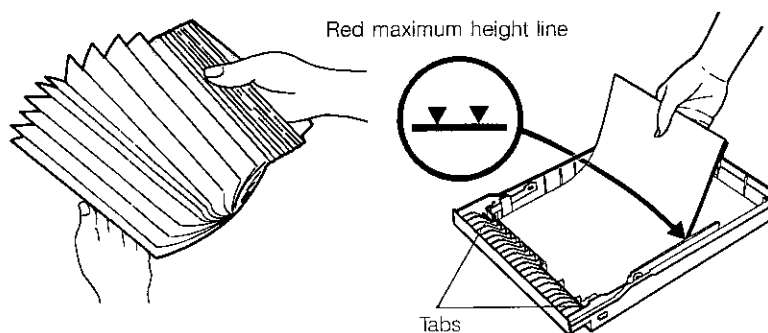
LOADING PAPER

The paper cassette feeds paper for automatic feeding and can hold about 250 sheets of standard weight paper (60 to 80 g/m² or 16 to 21 lbs. weight).

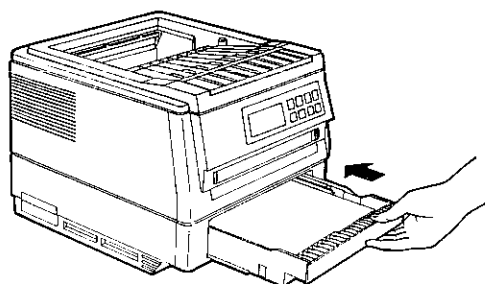
- When using the paper cassette for the first time, be sure to remove the securing tape shown below before loading the paper. (Follow the same procedure when using the optional cassettes.)
1. Push the pressure plate until it locks in position.



2. Fan up to 250 sheets of standard paper.
 3. Place the paper in the cassette with the corners under the metal corner tabs. Remove some paper if the paper is tight under the metal corner tabs. Shake the paper cassette gently to straighten the paper.
- Note that the side facing down is the printing side.
 - Do not load paper above the red maximum height line, or paper may misfeed.



4. Slide the paper cassette into the Laser Printer until it locks in place.



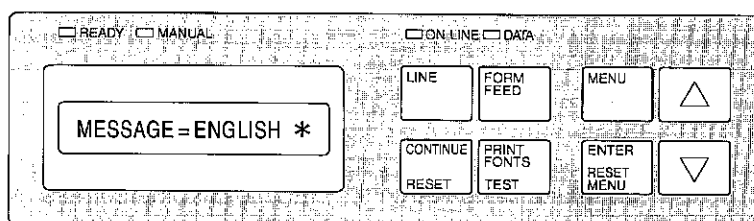
LANGUAGE SELECTION

The messages shown on the display, font printout, and SELF TEST #1 printout can be selected from five different languages: English, French, German, Italian, and Spanish. Follow the procedure below to set the desired language indication.

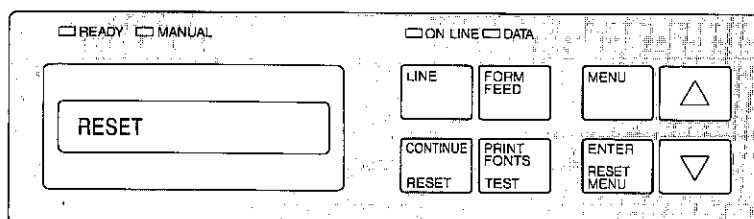
NOTE:

In this manual, underlined values given in display messages may vary according to your configuration or settings.

1. Press the **LINE** key to set the printer off-line.
2. Press the **MENU** key until "SYM.SET=ROMAN-8*" appears on the display.
3. Press the **MENU** key again until "MESSAGE=ENGLISH *" appears on the display.



4. Press the Δ or ∇ key to select the desired language:
 ENGLISH
 FRENCH
 GERMAN
 ITALIAN
 SPANISH
5. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.
6. Press the **MENU** key several times until the display shows "READY".
7. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.



- "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.
8. When all the settings are completed, perform SELF-TEST #1 before printing to confirm the selected values.

NOTE:

In the following pages, all messages, font printout, and SELF-TEST # printout are shown in English.

PRINTER SELF-TESTS

After you have performed all the installation procedures for the Laser Printer, we recommend that the self-tests be performed to check printing. There are two self-tests: SELF TEST #1 and SELF TEST #2.

SELF TEST #1 prints the selected menu items and values. SELF TEST #2 prints an entire sheet of characters in a test pattern using the internal character set.

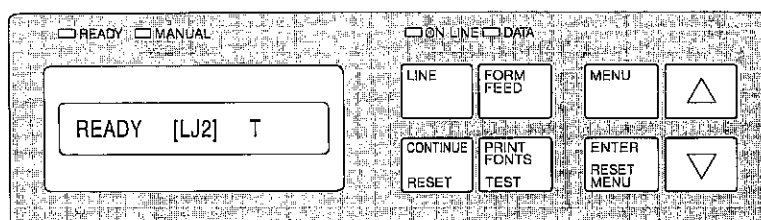
To perform these tests, check that the:

- supplies are installed.
- paper cassette is loaded with paper.
- Laser Printer is connected to a power outlet.
(A computer is not required for these tests.)

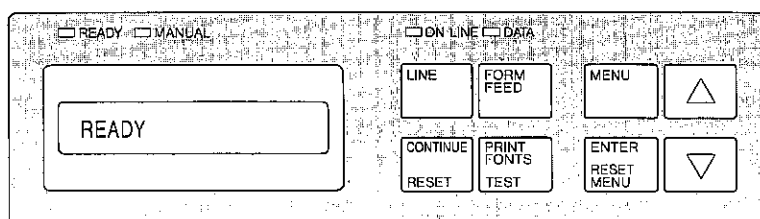


Entering the Self-Test Mode

1. Press the **power switch** to turn on the power.
 - "WARMING UP" appears on the display.
 - The ON LINE lamp lights, the READY lamp lights, and "READY [LJ2]T" appears on the display. In about 60 seconds, "READY" stops blinking.

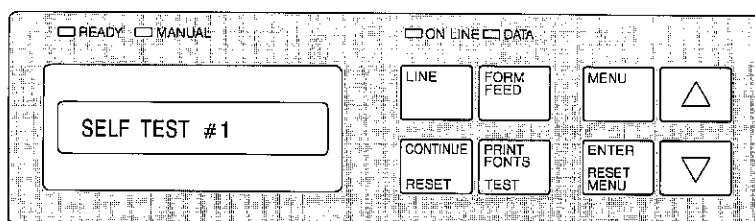


2. Press the **LINE key** to set the printer off-line.
 - The ON LINE lamp turns off.
 - "READY" appears on the display.



SELF-TEST #1

1. Press and hold the **PRINT FONTS/TEST** key until the display shows "SELF TEST #1".



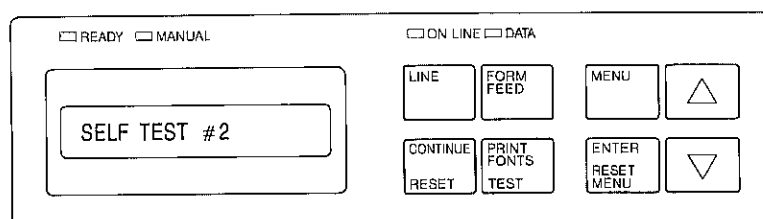
- The DATA lamp lights and printing begins.
- The printed sheet listing the menu settings (e.g. type of interface, emulation, etc.), such as shown below, is output, and the DATA lamp turns off.
- When printing is complete, "READY" appears on the display.

SAMPLE

| MENU SETTING LIST | |
|--------------------|-------------------------|
| Printing Menu | |
| Paper Source | = Tray |
| Copies | = 1 |
| Font Source | = Internal Font |
| Font Number | = 00 |
| Form Length | = 64 Lines |
| Line Format | = 77 |
| Configuration Menu | |
| Symbol Set | = ROMAN-8 |
| Interface | = Parallel |
| Timing | = 1 |
| Emulation | = HP LaserJet series II |
| Message | = English |
| Other Information | |
| Tray Paper Size | = A4 |
| Current Font ID | = None |
| Current Typeface | = COURIER |
| Program ROM | = EPR1A,EPR2A |
| Internal Font ROM | = ICG1A,ICG2A |
| PCU-Firmware | = PCU-I |
| Installed Memory | = 512 KBytes |
| Life Count | |
| Machine | = 1 Sheets |
| Photoconductor | = 1 Sheets |
| Developer | = 1 Sheets |

SELF-TEST #2

1. Press and hold the **PRINT FONTS/TEST** key until the display shows "SELF TEST #2".



- The DATA lamp lights and printing begins.
- The printed test pattern is output, and the DATA lamp turns off. Check that the printout is similar to the one shown below.

SAMPLE

```
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
)+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
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0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
23456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
3456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
56789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
6789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
89:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
9:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
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@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
abcdefghijklmnopqrstuvwxyz
```

3. PRINTING

STANDARD PRINTING

After you have confirmed that the Laser Printer is printing normally through the self-tests, you are now ready to print computer files. To print computer files check that the:

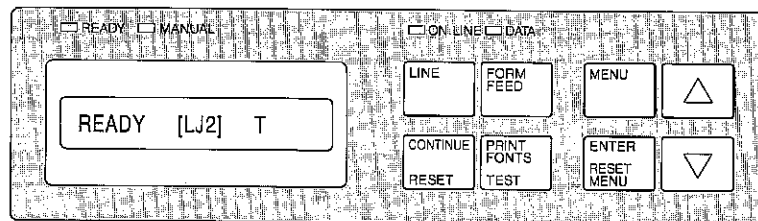
- supplies are installed.
- paper cassette is loaded with paper. (Be sure the paper size matches the size of the document to be printed.)
- computer is connected through the proper interface cable.
- Laser Printer is connected to a power outlet.

Press the **power switch** to turn on the power.

- "WARMING UP" appears on the display.
- The ON LINE lamp lights, the READY lamp lights, and "READY [LJ2]T" appears on the display. (The message indicates the emulation and the paper cassette selected; i.e. LJ2 = HP LaserJet series II, T = standard paper cassette.) In about 60 seconds, "READY" stops blinking.

NOTE:

While "READY" is blinking, the printer can receive data. Printing commences when "READY" stops blinking.



The Laser Printer can now print a file from the computer in the same manner as other printers. Note that the Laser Printer prints in page units and will not print until a page of data (terminated by a form feed command) has been received. Therefore, if several pages are sent, the last page will remain unprinted unless it ends with a form feed command.

If the last page does not end with a form feed command and the form feed command is not sent for 5 seconds, the DATA lamp blinks to indicate that there is data for the last page remaining in the print buffer. In this case:

- Press the **LINE key** to set the Laser Printer off-line.
- Press the **FORM FEED key** to print the last page.

MANUAL FEED PRINTING

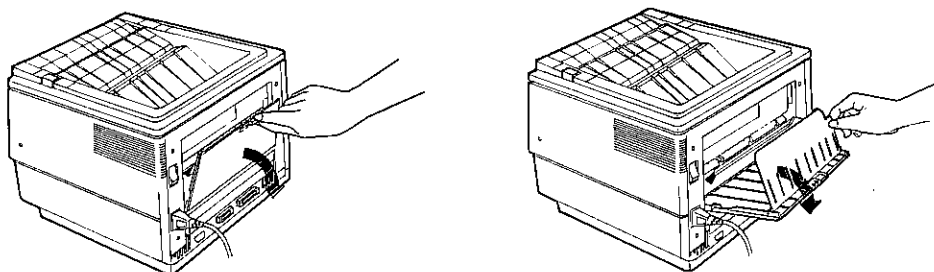
The manual feed slot allows manual feeding of paper other than standard 60 to 80 g/m² paper, such as heavier paper stock, transparency film, and envelopes. When using nonstandard paper, select the face up tray.

Face Up Tray

The face up tray holds up to 30 sheets of paper.

The face up tray is located on the back of the Laser Printer. When using, fold down and out as shown below.

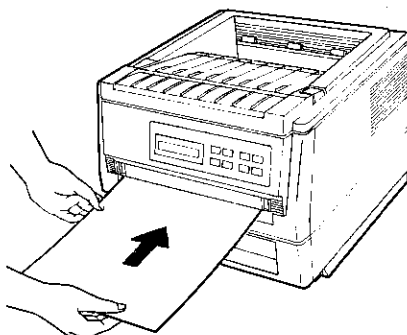
*Note that the tray might not be able to hold legal size paper.



PRINTING

Single Sheet Manual Feed Printing

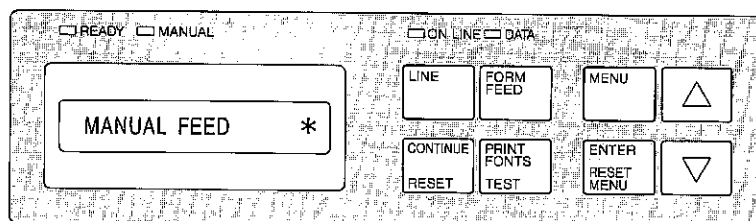
- When manual feeding multiple sheets of paper, be sure the paper cassette is installed. If not, use the Continuous Manual Feed mode explained on the following page.
1. Insert a single sheet of paper or envelope in the manual feed slot, aligning its edge with the left side of the slot.
 - Insert invoice-size paper and envelopes lengthwise.
 - The paper will be drawn in automatically.
 - Insert only one sheet at a time.
 - Note that the side facing up is the printing side.



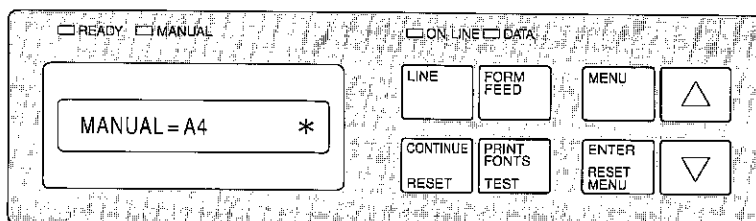
2. Send data from the computer and print.

Continuous Manual Feed Printing

- When manual feeding envelopes, use the face up tray.
1. If the Laser Printer is on-line, press the **LINE key** to set the printer off-line.
 - The ON LINE lamp turns off and "READY" appears on the display.
 - Press the **MENU key** to select the Printing Menu. "TRAY=A4" (i.e. A4 size cassette installed) appears on the display.
 2. Press the **Δ or ∇ key** several times until "MANUAL FEED" appears on the display.
 3. Press the **ENTER/RESET MENU key**.
 - The MANUAL lamp lights.
 - An asterisk (*) appears on the display.



4. Press the **MENU key** until "MANUAL=A4*" appears on the display.

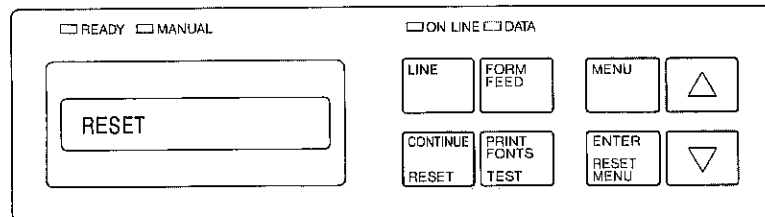


5. Press the **Δ or ∇ key** to select the desired paper size.

The paper size is indicated as:

| | |
|----------------------|--------------------------------------|
| LETTER..... Letter | (AFSP Government letter |
| LEGAL..... Legal | (8" × 10.5") |
| EXECUT ... Executive | COM-10..... Commercial 10 (Business) |
| INVOIC Invoice | MONARC Monarch |
| A4..... A4 | DL International DL |
| B5..... B5 | C5 International C5 |

6. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.
7. Press the **MENU** key several times until "READY" appears on the display.
8. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display.
 - "READY [LJ2]MF" appears on the display, and the ON LINE lamp lights.



9. Send data from the computer to the Laser Printer.
 - In the HP LaserJet series II emulation mode, the paper size or the envelope size is specified by the host computer. When the paper size or the envelope size setting sent from the host computer differs from the current paper size or envelope size setting, "FEED= B5" appears on the display. This indicates that B5 size paper is required for manual feed.
10. Insert a single sheet of paper or envelope (lengthwise) into the manual feed slot, aligning its edge with the left side of the slot.
 - The Laser Printer will detect that a sheet or envelope has been inserted and will automatically print the page.
11. When the printed page is output, insert the next sheet of paper.
 - If the next sheet is inserted before the previous page is output, paper misfeed or an error may occur.
 - In the HP LaserJet series II emulation, the same display shown in step 9 appears, to prompt the manual feeding of the next sheet.
 - If an error occurs, clear the error by following the instructions on page 89. Then, press the **LINE** key to set the printer on-line.
12. When finished with manual feeding, press the **LINE** key to set the printer off-line.
 - The ON LINE lamp turns off and "READY" appears on the display.
13. Press the **MENU** key to select the Printing Menu. "MANUAL FEED" appears on the display.
14. Press the Δ or ∇ key to select the desired paper source and press the **ENTER/RESET MENU** key.
15. Press the **MENU** key several times until "READY" appears on the display.
16. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display.
 - "READY [LJ2]T" appears on the display and the ON LINE lamp lights.

4. SETTING THE MENU ITEMS

Laser Printer menu items such as paper orientation, interface selection, emulation mode, and font can be set using the operation panel keys.

These have been pre-selected at the factory to the initial settings given below, which will remain in effect until changed.

When the settings have been changed to suit your printing needs, they can be saved as Panel Default Settings, which are used whenever you turn on the printer or reset it.

INITIAL SETTINGS

Common Functions

| | |
|---------------------------|-----------------------|
| Orientation | Portrait |
| Page size | Normal |
| Manual feed paper size | A4 |
| Envelope size | COM-10 |
| Interface | Parallel |
| Timing | 1 |
| Emulation mode | HP LaserJet series II |
| Automatic line feed | OFF |
| Paper source | Standard cassette |
| National character | U.S.A. |
| IBM national character | GLOBAL |
| Automatic carriage return | OFF |
| Zero character | 0 |
| Language | English |
| Auto tray change | NO |

RS-232C Serial Interface Functions

| | |
|--------------|------|
| Baud rate | 9600 |
| Data bit | 8 |
| Parity | NON |
| Robust XON | ON |
| DTR polarity | Hi |

HP LaserJet Series II Emulation Functions

| | |
|-------------|-----------------|
| Font source | Resident |
| Font number | 0 |
| Form length | 64 (in A4 size) |
| Symbol set | Roman-8 |
| Line format | 77 |

Epson FX-80 Emulation Functions

| | |
|--------------------|-----|
| Font number | 0 |
| FIX auto line feed | OFF |
| FIXED select | ON |

IBM Proprinter Emulation Functions

| | |
|-------------|---|
| Font number | SET 1 (Set 2: European countries except U.K.) |
|-------------|---|

IBM Graphics Printer Emulation Functions

| | |
|-------------|---|
| Font Number | SET 1 (Set 2: European countries except U.K.) |
|-------------|---|

Diablo 630 Emulation Functions

| | |
|-----------------|----------|
| Font source | Resident |
| Font number | 0 |
| Character pitch | 10 |

MENU SETTING MODES

There are two kinds of menu: the Printing Menu and the Configuration Menu. The Printing Menu contains items that determine the final appearance of the printed page such as the font and lines per page. The Configuration Menu contains items that determine the communication method between the computer and the Laser Printer. The items in each menu differ depending on the emulation mode. Refer to the reference guide for each emulation mode.

The keys below are used to select menu items and values.



MENU key

Press to enter the Printing Menu setting mode. Hold down the key for longer than 5 seconds to enter the Configuration Menu setting mode. Also used to select items in each menu.



△ and ▽ keys

Press to select the values for the items to set.



The menu values change with each press of a key.



ENTER/RESET MENU key

Press to select a value for a menu item. When the value is selected, an asterisk (*) appears on the display.



CONTINUE/RESET key

Press until "RESET" appears on the display. The selected values are saved and become effective as panel default settings.

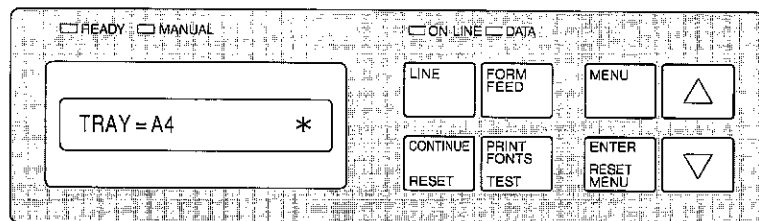
NOTE:

In this manual, underlined values given in display messages may vary according to your configuration or settings.

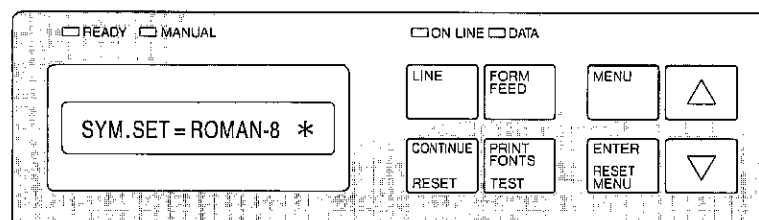
BASIC SETTING PROCEDURE

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press the **MENU** key to select either the Printing Menu or Configuration Menu.

Printing Menu: "TRAY=A4*" appears on the display.

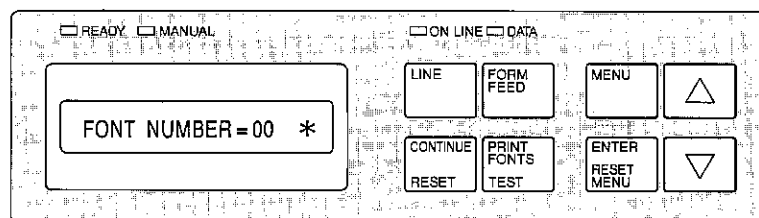


Configuration Menu: "SYM.SET=ROMAN-8*" appears on the display.



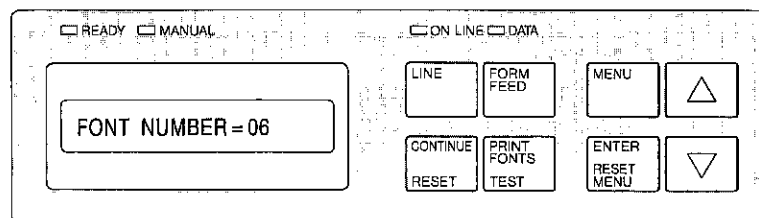
Example:
HP LaserJet
series II
emulation

3. Press the **MENU** key again until the desired menu item appears on the display.



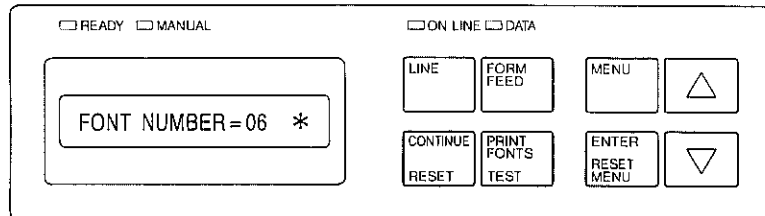
Example:
Selecting a
font number

4. Press the **Δ** or **▽** key to select the desired value.

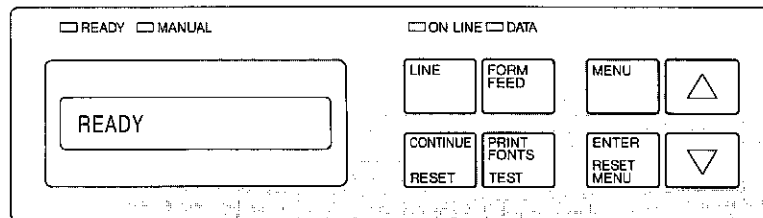


Example:
Font number
06 (Courier
Bold)

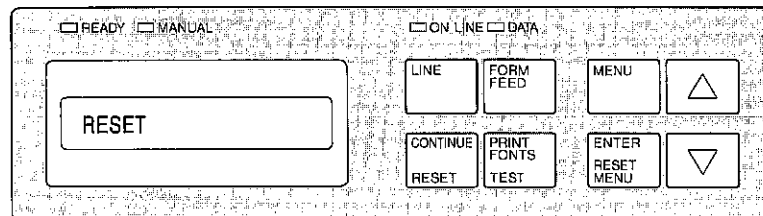
5. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.



6. Press the **MENU** key until the display shows "READY".



7. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.
 - The selected value becomes available as a Panel Default Setting.



8. When all the settings are completed, perform SELF-TEST #1 before printing to confirm the selected values.

HP LASERJET SERIES II EMULATION

Printing Menu Items

The Printing Menu for the HP LaserJet series II emulation includes the following items:

| | |
|--|---|
| Paper source | Select the paper source. |
| Number of copies | Sets the number of copies for the multi-print feature. |
| Manual feed paper size | Sets the paper size in the manual feed mode. This item appears only when the manual feed mode is set. |
| Envelope size | Sets the envelope size. This item appears only when the optional envelope feeder is installed. |
| Auto tray change | Sets the AUTO TRAY CHANGE feature; automatically selects the alternate paper source if paper runs out or if another size of paper is required. This can only operate if the second cassette unit is installed and contains the right size of paper. |
| Font source | Sets the font source. A and B can be selected only when an optional font card is inserted in either font card slot. S (soft font) appears only when a soft font is available. |
| Font number | Sets the font number. See page 38 for font numbers. |
| Form length (lines per page) | Sets the form length. |
| Line format | Sets the number of characters in a line for A4 size paper (HP emulation only). |

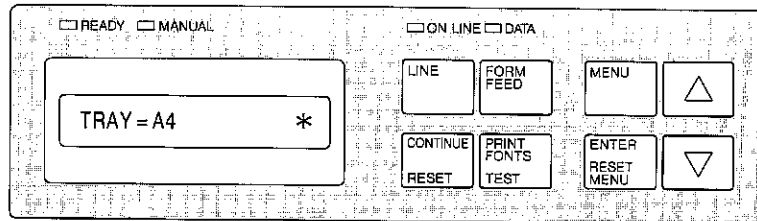
Printing Menu Reference Guide

| Item | Display | Selectable values |
|------------------------|-----------------|--|
| Paper source | TRAY=A4 | TRAY 1 MANUAL FEED TRAY 2* ENVELOPE FEED* |
| Number of copies | COPIES=01 | 01, 02, ...,99 |
| Manual feed paper size | MANUAL=A4 | LETTER, LEGAL, EXECUT, INVOIC, A4, B5, AFSP, COM-10, MONARC, DL, C5 |
| Envelope size | ENVELOPE=COM-10 | COM-10, MONARC, DL, C5 |
| Auto tray change | AUTO TRAY CHG=N | N (NO), Y (YES) |
| Font source | FONT SOURCE=I | I (Internal) A (Slot A) B (Slot B) S (Soft font) |
| Font number | FONT NUMBER=00 | 00, 01, ... 99 |
| Form length | FORM LENGTH=060 | 05, 06, ...128 |
| Line format | LINE FORMAT=77 | 77, 80 |

*Option

Paper Source

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press the **MENU** key once so that "TRAY=A4*" appears on the display.

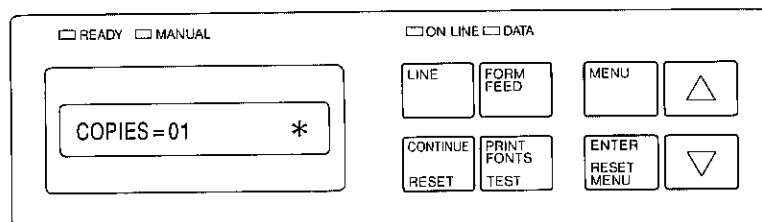


3. Press the Δ or ∇ key to select the desired paper source.
4. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.
5. Press the **MENU** key until the display shows "READY".
6. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

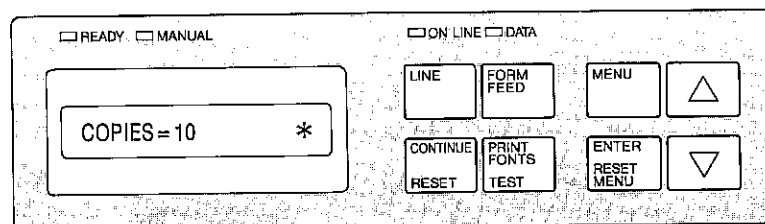
Number of Copies

The number of copies is a power-on default, and will return to "COPIES=01" when the power is turned on.

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press the **MENU** key until "COPIES=01*" appears on the display.



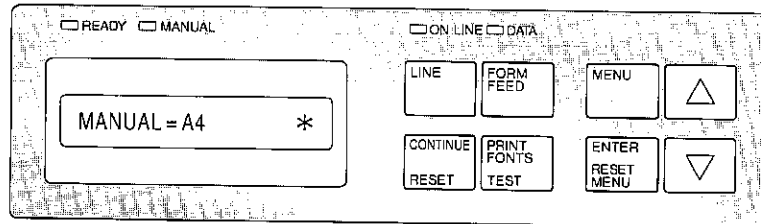
3. Press the Δ or ∇ key to select the desired number of copies from 1 to 99.
4. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.



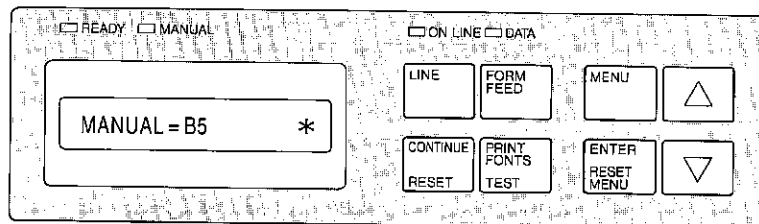
5. Press the **MENU** key until the display shows "READY".
6. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

Manual Feed Paper Size

1. Set the Laser Printer to the manual feed mode (see page 22).
2. Press the **LINE** key to set the Laser Printer off-line.
3. Press the **MENU** key once so that "TRAY=A4*" appears on the display.
4. Press the **MENU** key again until "MANUAL=A4*" appears on the display.



5. Press the Δ or ∇ key to select the desired paper size:
 LETTER... Letter (AFSP..... Government letter)
 LEGAL.... Legal COM-10..... Commercial 10 (Business)
 EXECUT.. Executive MONARC.. Monarch
 INVOIC.... Invoice DL..... International DL
 A4..... A4 C5..... International C5
 B5..... B5
6. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.

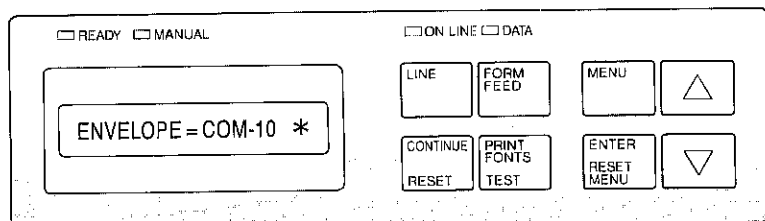


7. Press the **MENU** key several times until the display shows "READY".
8. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
 - "READY [LJ2]MF" appears on the display, and the ON LINE lamp lights.

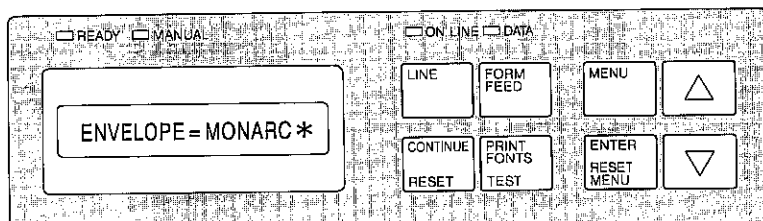
Envelope Size

This setting is made when the optional envelope feeder is installed.

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press the **MENU** key once so that "TRAY=A4*" appears on the display.
3. Press the **MENU** key again until "ENVELOPE=COM-10*" appears on the display.



4. Press the Δ or ∇ key to select the desired envelope size:
 COM-10..... Commercial 10 (Business)
 MONARC ... Monarch
 DL International DL
 C5 International C5
 5. Press the **ENTER/RESET MENU** key.
- An asterisk (*) appears on the display.



6. Press the **MENU** key until the display shows "READY".
 7. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
- "READY [LJ2]EV" appears on the display, and the ON LINE lamp lights.

NOTE

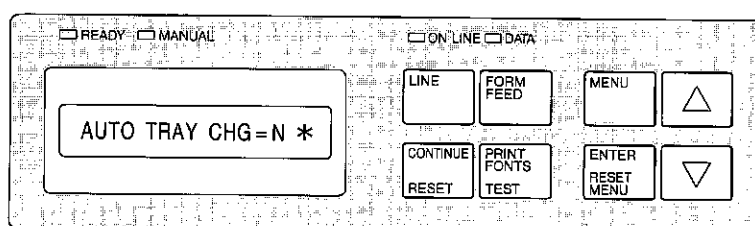
In the HP LaserJet series II emulation mode, the envelope size is specified by the host computer. When the envelope size setting sent from the host computer differs from the current envelope size setting, "ENVELOPE=MONARC" (for example: change envelope to Monarch size) appears on the display.

- Feed the envelope of the size requested.
- To override this request, press the **CONTINUE/RESET** key. An envelope size different from the one requested can be fed. However, it may be improperly formatted.

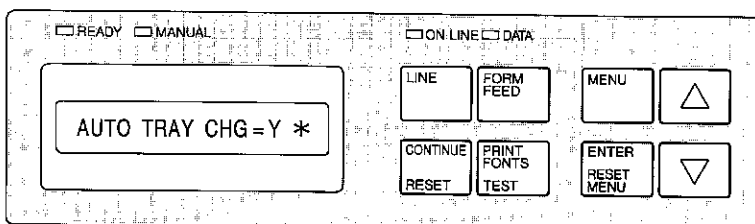
Auto Tray Change

This setting is made when the optional second cassette unit or the envelope feeder is installed.

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press the **MENU** key once so that "TRAY=A4 *" appears on the display.
3. Press the **MENU** key again until "AUTO TRAY CHG=N *" appears on the display.



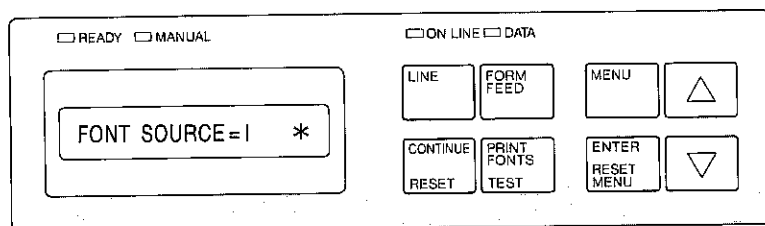
4. Press the Δ or ∇ key to select the desired mode: Y (YES) or N (NO).
5. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.



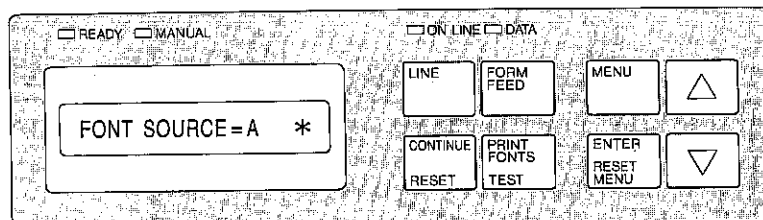
6. Press the **MENU** key until the display shows "READY".
7. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

Font Source

1. Press the **LINE** key to set the Laser Printer off-line.
2. If using an optional font card, insert it in the font card slot. See page 67.
3. Press the **MENU** key once so that "TRAY=A4*" appears on the display.
4. Press the **MENU** key again until "FONT SOURCE=I*" appears on the display.



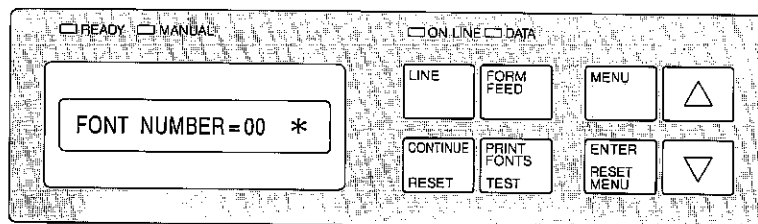
5. Press the Δ or ∇ key to select the desired font source: I (Internal), A (slot A), B (slot B), S (soft font).
 - "A" and "B" appear only when an optional font card is inserted in either font card slot.
 - "S" appears only when a permanent soft font is available.
6. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.



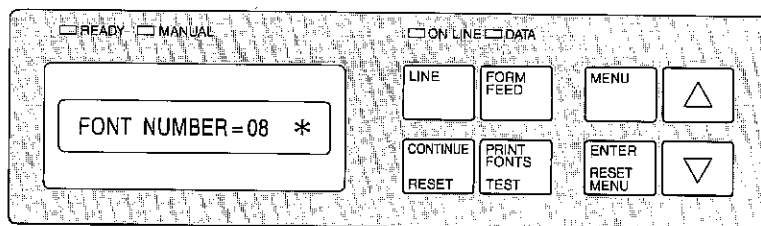
7. Press the **MENU** key until the display shows "READY".
8. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

Font Number

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press the **MENU** key once so that "TRAY=A4*" appears on the display.
3. Press the **MENU** key again until "FONT NUMBER=00*" appears on the display.



4. Press the Δ or ∇ key to select the desired font number (see font list, pages 81 to 86 or refer to the font printout sample).
5. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.



6. Press the **MENU** key until the display shows "READY".
7. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

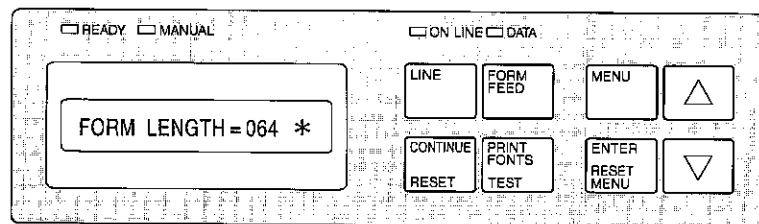
HP LaserJet Series II Internal Font Number List

| FONT NUMBER | TYPEFACE | POINT | PITCH | SYMBOL SET | PORT/LAND |
|----------------|--------------|-------|-------|------------|-----------|
| 00 | Courier | 12 | 10 | ROMAN-8 | PORT |
| 01 | Courier | 12 | 10 | IBM-US | PORT |
| 02 | Courier | 12 | 10 | IBM-D/N | PORT |
| 03 | Courier | 12 | 10 | ECMA-94 | PORT |
| 04 | Courier Bold | 12 | 10 | ROMAN-8 | PORT |
| 05 | Courier Bold | 12 | 10 | IBM-US | PORT |
| 06 | Courier Bold | 12 | 10 | IBM-D/N | PORT |
| 07 | Courier Bold | 12 | 10 | ECMA-94 | PORT |
| 08 | Line Printer | 8.5 | 16.7 | ROMAN-8 | PORT |
| 09 | Line Printer | 8.5 | 16.7 | IBM-US | PORT |
| 10 | Line Printer | 8.5 | 16.7 | IBM-D/N | PORT |
| 11 | Line Printer | 8.5 | 16.7 | ECMA-94 | PORT |
| 12 | Courier | 12 | 10 | ROMAN-8 | LAND |
| 13 | Courier | 12 | 10 | IBM-US | LAND |
| 14 | Courier | 12 | 10 | IBM-D/N | LAND |
| 15 | Courier | 12 | 10 | ECMA-94 | LAND |
| 16 | Courier Bold | 12 | 10 | ROMAN-8 | LAND |
| 17 | Courier Bold | 12 | 10 | IBM-US | LAND |
| 18 | Courier Bold | 12 | 10 | IBM-D/N | LAND |
| 19 | Courier Bold | 12 | 10 | ECMA-94 | LAND |
| 20 | Line Printer | 8.5 | 16.7 | ROMAN-8 | LAND |
| 21 | Line Printer | 8.5 | 16.7 | IBM-US | LAND |
| 22 | Line Printer | 8.5 | 16.7 | IBM-D/N | LAND |
| 23 | Line Printer | 8.5 | 16.7 | ECMA-94 | LAND |

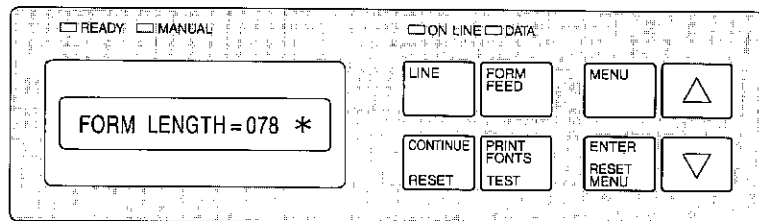
SETTING THE
MENU ITEMS

Form Length

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press the **MENU** key once so that "TRAY=A4*" appears on the display.
3. Press the **MENU** key again until "FORM LENGTH=064*" appears on the display.



4. Press the Δ or ∇ key to select the desired lines per page from 5 to 128.
5. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.



6. Press the **MENU** key once so that the display shows "READY".
7. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamp lights up.

NOTE:

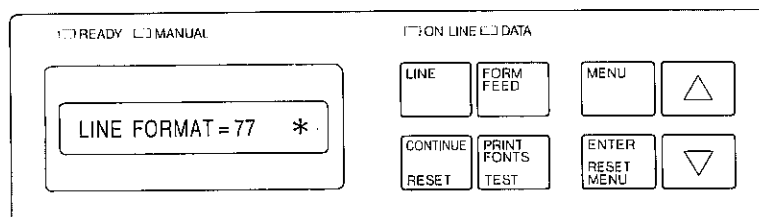
In the HP LaserJet series II emulation mode, the paper size is specified by the host computer. When the paper size setting sent from the host computer differs from the current paper size, "CHG. TRAY=B5" (for example: change paper to B5 size) appears on the display.

- Change the paper cassette to the size requested.
- To override this request, press the **CONTINUE/RESET** key.

A paper size different from the one requested can be fed. However, the page may be improperly formatted.

Line Format

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press the **MENU** key once so that "TRAY=A4*" appears on the display.
3. Press the **MENU** key again until "LINE FORMAT= 77*" appears on the display.



4. Press the Δ or ∇ key to select the desired line format, 77 or 80.
5. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.
6. Press the **MENU** key until the display shows "READY".
7. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

WARNING

If the line format is set to 80, the original HP line format 77 chr./line will not be supported.

Configuration Menu Items

The Configuration Menu for the HP LaserJet series II emulation includes the following items:

| | |
|---------------------|---|
| Symbol Set | A symbol set is a sub-grouping of the characters available in a font. |
| Interface | Centronics parallel and RS-232C serial interfaces are available. The printer is preset at the factory for parallel communication. |
| Timing | With the Centronics parallel interface, the timing for receiving the acknowledge signal differs depending on the computer. Thus, the timing for the acknowledge signal must be adjusted. This item is used to select the timing value. The default value is TIMING 1. See page 99 for more details. (For parallel interface only.) |
| Baud rate | The baud rate is the data transfer rate between the computer and the printer. This rate can be set from between 300 and 19,200 baud. (For serial interface only.) |
| Data bit | The number of data bit can be changed. (For serial interface only.) |
| Parity | The parity status can be set. (For serial interface only.) |
| Robust XON | In the XON/XOFF protocol, if no data is received within approximately one second of the transmission of an XON, the printer may be configured so that it sends additional XON's at one second intervals until data is received. This item is used to select whether additional XON's should be transmitted. The factory setting is ROBUST-XON set to ON. (For serial interface only.) |
| DTR polarity | The configuration of DTR polarity determines whether pin 20 on the serial interface connector is high or low when the printer is ready. If DTR polarity is high, pin 20 is high when the printer is ready. (For serial interface only.) |
| Emulation | This item is used to select the emulation mode. |
| Language | The messages on the display, font printout and SELF-TEST #1 printout can be selected from five different languages (English, French, German, Italian, Spanish). |

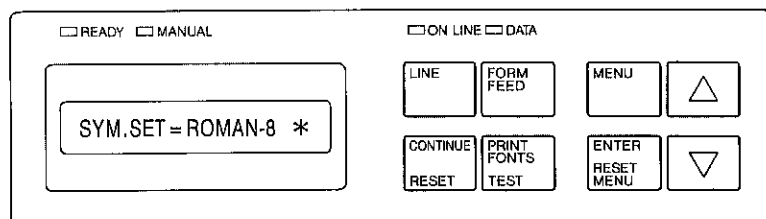
Configuration Menu Reference Guide

| Item | Display | Selectable values |
|--------------|------------------|---|
| Symbol set | SYM. SET=ROMAN-8 | See table on next page. |
| Interface | I/F=PARALLEL | SERIAL, PARALLEL |
| Timing | TIMING=1 | 1, 2, 3 |
| Baud rate | BAUD RATE=9600 | 300, 600, 1200, 2400, 4800, 9600, 19200 |
| Data bit | DATA BIT=8 | 8, 7 |
| Parity | PARITY=NON | NON, EVN, ODD |
| Robust XON | ROBUST XON=ON | ON, OFF |
| DTR polarity | DTR POLARITY=HI | HI (High), LO (Low) |
| Emulation | EMULATION=HPLJ2 | HPLJ2, FX80, IBMPP, IBMGP, D630, HEX |
| Language | MESSAGE=ENGLISH | ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH |

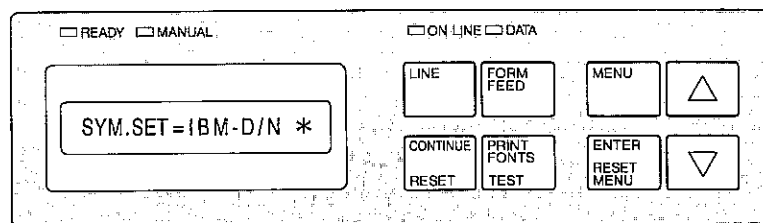
| Font Printout Symbol Set # | Display | Symbol Set |
|-------------------------------|---------|----------------------|
| 8U | ROMAN-8 | ISO 100 Latin 1 |
| 0N | ECMA-94 | PC-8 |
| 10U | IBM-US | PC-8 Denmark/Norway |
| 11U | IBM-D/N | ISO IRV |
| 2U | ISO-2 | ISO United Kingdom |
| 1E | ISO-4 | ANSI ASCII (USASCII) |
| 0U | ISO-6 | ISO Swedish |
| 3S | ISO-10 | ISO Swedish: names |
| 0S | ISO-11 | JIS ASCII |
| 0K | ISO-14 | ISO Italian |
| 0I | ISO-15 | ISO Portuguese |
| 4S | ISO-16 | ISO Spanish |
| 2S | ISO-17 | ISO German |
| 1G | ISO-21 | ISO French |
| 0F | ISO-25 | ISO Chinese |
| 2K | ISO-57 | ISO Norwegian v1 |
| 0D | ISO-60 | ISO Norwegian v2 |
| 1D | ISO-61 | ISO French |
| 1F | ISO-69 | ISO Portuguese: IBM |
| 5S | ISO-84 | ISO Spanish: IBM |
| 6S | ISO-85 | HP German |
| 0G | GERMAN | HP Spanish |
| 1S | SPANISH | |

Symbol Set

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press and hold the **MENU** key for longer than 5 seconds until "SYM.SET=ROMAN-8*" appears on the display.



3. Press the Δ or ∇ key to select the desired symbol set.
 4. Press the **ENTER/RESET MENU** key.
- An asterisk (*) appears on the display.

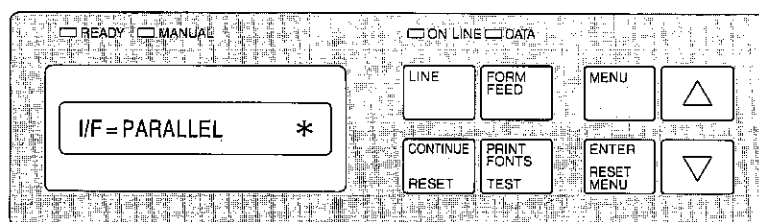


5. Press the **MENU** key until the display shows "READY".
 6. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
- "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

SETTING THE
MENU ITEMS

Interface

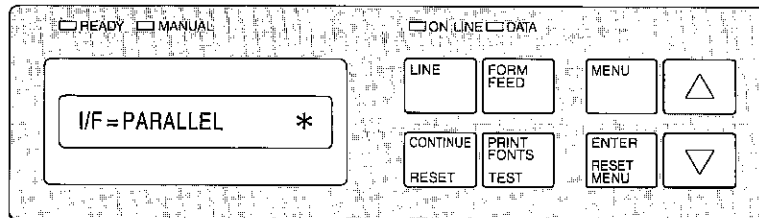
1. Press the **LINE** key to set the Laser Printer off-line.
2. Press and hold the **MENU** key until "SYM.SET=ROMAN-8*" appears on the display.
3. Press the **MENU** key again until "I/F=PARALLEL*" appears on the display.



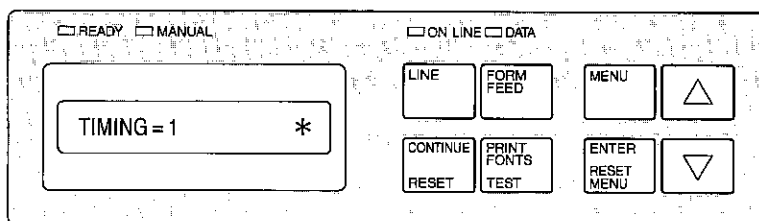
4. Press the Δ or ∇ key to select the desired interface mode: SERIAL or PARALLEL.
 - The Configuration Menu items differ depending on the interface mode. Follow the respective procedure below.

(PARALLEL interface)

5. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.



6. Press the **MENU** key once so that the display shows "TIMING=1*."



7. Press the Δ or ∇ key to select 1, 2 or 3 and press the **ENTER/RESET MENU** key.
 - See page 99 for details on signal timing.
 - An asterisk (*) appears on the display.
8. Press the **MENU** key until the display shows "READY".
9. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

(SERIAL interface)

5. Press the **ENTER/RESET MENU** key.

- An asterisk (*) appears on the display.

6. Press the **MENU** key once to display "BAUD RATE=9600*".

7. Press the Δ or ∇ key to select the desired setting and press the **ENTER/RESET MENU** key.

- An asterisk (*) appears on the display.

8. Press the **MENU** key once to display "DATA BIT=8*".

9. Press the Δ or ∇ key to select 8 or 7 and press the **ENTER/RESET MENU** key.

- An asterisk (*) appears on the display.

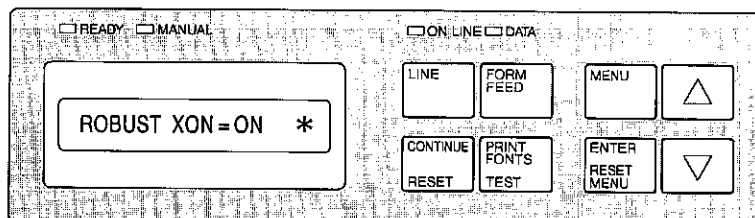
10. Press the **MENU** key once to display "PARITY=NON*".

11. Press the Δ or ∇ key to select NON, EVN or ODD and press the **ENTER/RESET MENU** key.

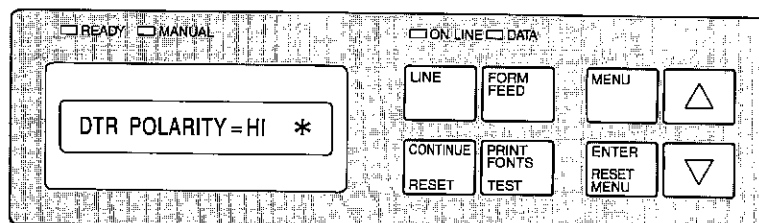
- An asterisk (*) appears on the display.

12. Press the **MENU** key once to display "ROBUST XON=ON*".

13. Press the Δ or ∇ **key** to select ON or OFF and press the **ENTER/RESET MENU key**.
- An asterisk (*) appears on the display.



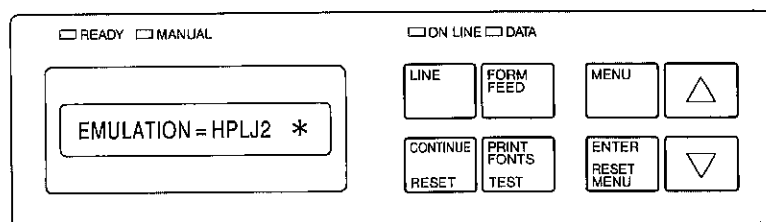
14. Press the **MENU key** once to display "DTR POLARITY=HI*."
15. Press the Δ or ∇ **key** to select HI or LO and press the **ENTER/RESET MENU key**.
- An asterisk (*) appears on the display.



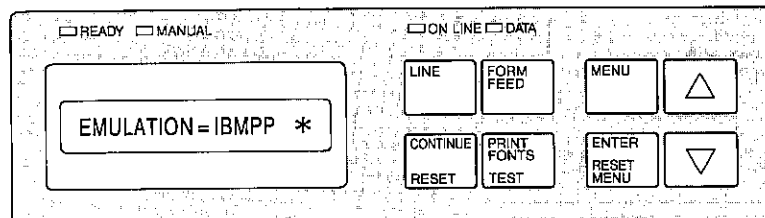
16. Press the **MENU key** until the display shows "READY".
17. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
- "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

Emulation

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press and hold the **MENU** key until "SYM.SET= ROMAN-8*" appears on the display.
3. Press the **MENU** key again until "EMULATION= HPLJ2*" appears on the display.



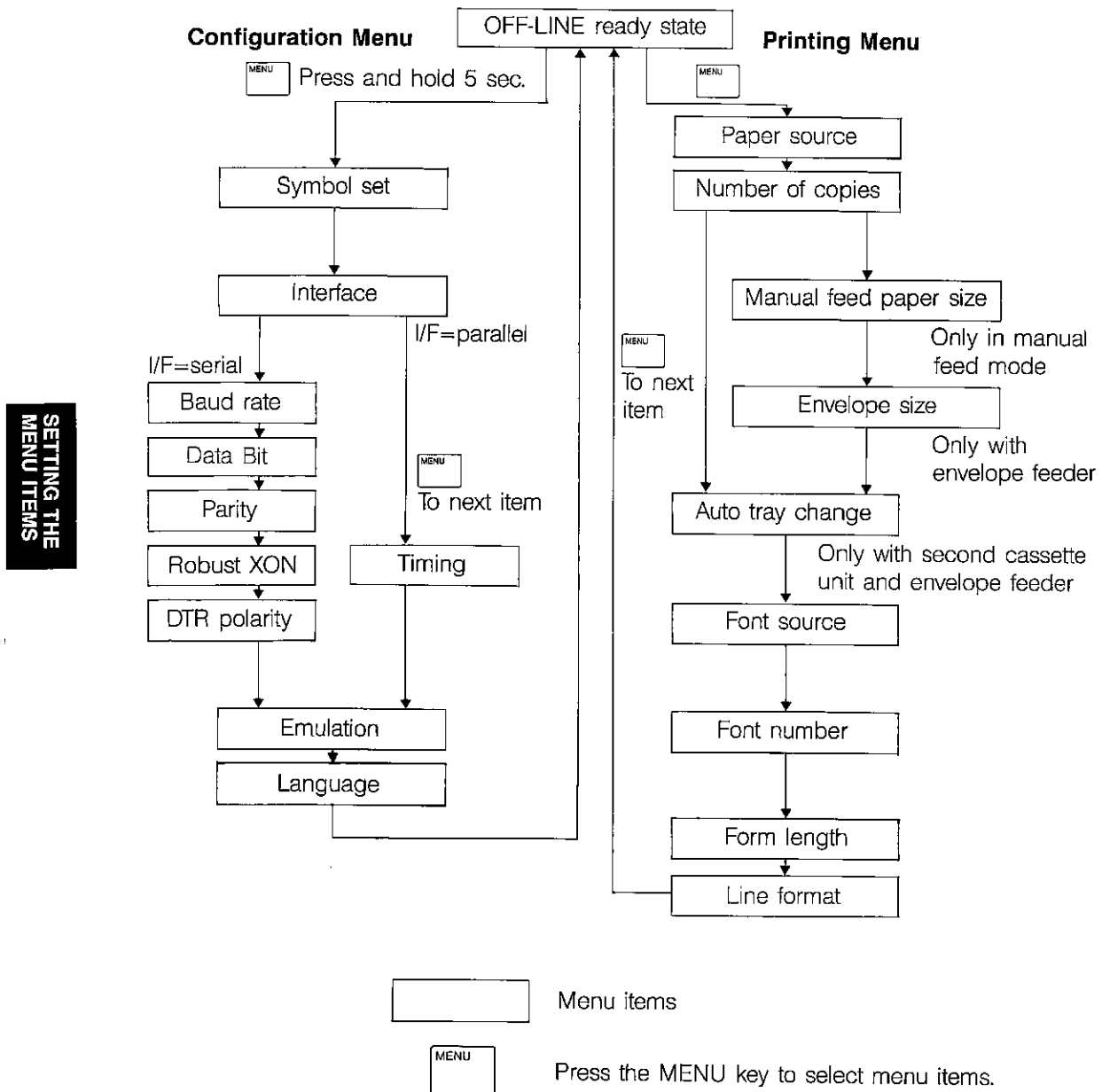
4. Press the Δ or ∇ key to select the desired emulation:
 - HPLJ2 (HP LaserJet series II)
 - FX80 (Epson FX-80)
 - IBMGP (IBM Graphics Printer)
 - IBMPP (IBM Proprinter)
 - D630 (Diablo 630/630 ECS)
 - HEX (Hex Dump)
5. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears on the display.



6. Press the **MENU** key until the display shows "READY".
7. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display, to save the setting.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

MENU SETTING STRUCTURE

HP LaserJet series II



OTHER EMULATIONS

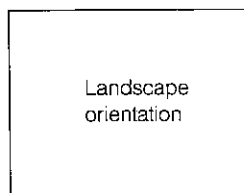
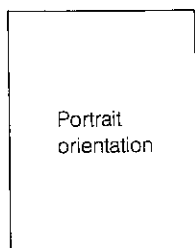
For the Epson FX-80, IBM Proprinter, IBM Graphics Printer, and Diablo 630/630 ECS emulations, the menu setting structure, setting items, and selectable values differ depending on the emulation.

The keys used to select menu items and values and the setting procedure are the same as those used for HP LaserJet series II emulation. See page 27 for the Basic Setting Procedure.

With these emulations, the following items can be selected in addition to the items for the HP LaserJet series II emulation.

Orientation

Orientation refers to the direction of print on the page.



Page Size

Page size selects the number of lines that can be printed on a page. There are two modes: normal and extended.

Normal: Prints the normal number of lines

Extended: Prints the extended number of lines

Example:

On letter size Normal up to 63 lines

 Extended up to 66 lines

For extended size printing of characters, the space between the lines is reduced. However, bit images are uniformly compressed vertically. A circle, for example, will be printed with an oval shape.

Auto Feed

(FX-80 only)

This is effective only when the parallel interface is selected. When off and AUTO LF (pin 14 on the parallel interface connector) is enabled, the CR and LF operations are performed for a CR code input only. When AUTO LF is on, the control signals on pin 14 are ignored and always fixed to AUTO LF mode.

Fixed Select
(FX-80 only)

This is effective only when the parallel interface is selected. When on, SELECT IN (pin 36 on the parallel interface connector) is ignored and the printer is always in the select mode. When off, SELECT IN is effective and the printer is deselected by an input of the DC3 code only when this signal is high.

Epson FX-80 Emulation

Printing Menu Items

| Item | Display | Selectable values |
|------------------------|-----------------|---|
| Paper source | TRAY=A4 | TRAY 1 MANUAL FEED TRAY 2* ENVELOPE FEED* |
| Number of copies | COPIES=01 | 01, 02 ... 99 |
| Manual feed paper size | MANUAL=A4 | LETTER, LEGAL, EXECUT, INVOIC, A4, B5, AFSP, COM-10, MONARC, DL, C5 |
| Envelope size | ENVELOPE=COM-10 | COM-10, MONARC, DL, C5 |
| Auto tray change | AUTO TRAY CHG=N | N (NO), Y (YES) |
| Orientation | ORIENTATION=P | P (Portrait) L (Landscape) |
| Font number | FONT NUMBER=00 | 00 (COURIER) 01 (CONDENSE) 02 (EMPHASIZE) 03 (CONDENSE EMPHASIZE) |
| Page size | PG SIZE=NORMAL | NORMAL, EXTEND |

*Option

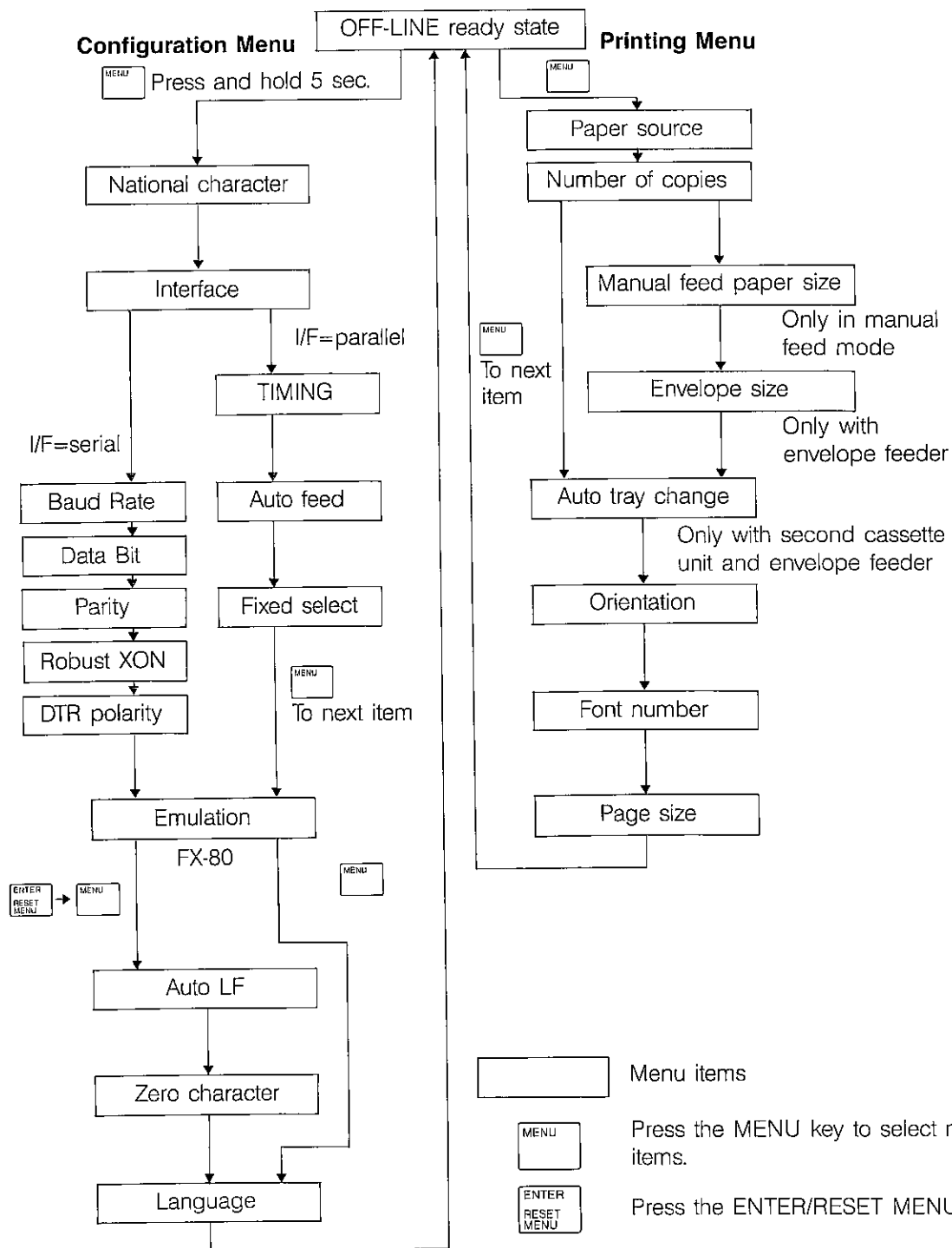
SETTING THE
MENU ITEMS

Configuration Menu Items

| Item | Display | Selectable Value |
|--------------------|-----------------|--|
| National character | NATIONAL=U.S.A. | U.S.A., FRANCE, GERMNY, ENGLND, DNMRK1, SWEDEN, ITALY, SPAIN JAPAN, NORWAY, DNMRK2 |
| Interface | I/F=SERIAL | SERIAL, PARALLEL |
| Baud rate | BAUD RATE=9600 | 300, 600, 1200, 2400, 4800, 9600, 19200 |
| Data bit | DATA BIT=8 | 8, 7 |
| Parity | PARITY=NON | NON, EVN, ODD |
| Robust XON | ROBUST XON=ON | ON, OFF |
| DTR polarity | DTR POLARITY=HI | HI (High), LO (Low) |
| Timing | TIMING=1 | 1, 2, 3 |
| Auto feed | AUTO FEED=OFF | OFF, ON |
| Fixed select | FIX SELECT=ON | OFF, ON |
| Emulation | EMULATION=FX80 | HPLJ2, FX80, IBMPP, IBMGP, D630, HEX |
| Auto line feed | AUTO LF=OFF | OFF (CR=CR) ON (CR=CR+LF) |
| Zero character | ZERO="0" | "0", "Ø" |
| Language | MESSAGE=ENGLISH | ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH |

MENU SETTING STRUCTURE

Epson FX-80



SETTING THE MENU ITEMS

IBM Proprinter/Graphics Printer Emulations

Printing Menu Items

| Item | Display | Selectable Value |
|------------------------|-----------------|--|
| Paper source | TRAY=A4 | TRAY 1 MANUAL FEED TRAY 2* ENVELOPE FEED* |
| Number of copies | COPIES=01 | 01, 02 ... 99 |
| Manual feed paper size | MANUAL=A4 | LETTER, LEGAL, EXECUT, INVOIC, A4, B5, AFSP, COM-10, MONARC, DL, C5 |
| Envelope size | ENVELOPE=COM-10 | COM-10, MONARC, DL, C5 |
| Auto tray change | AUTO TRAY CHG=N | N (NO), Y (YES) |
| Orientation | ORIENTATION=P | P (Portrait) L (Landscape) |
| Font number | FONT NUMBER=00 | 00 (CHARACTER SET 1) 01 (CHARACTER SET 2) |
| Page size | PG SIZE=NORMAL | NORMAL, EXTEND |

*Option

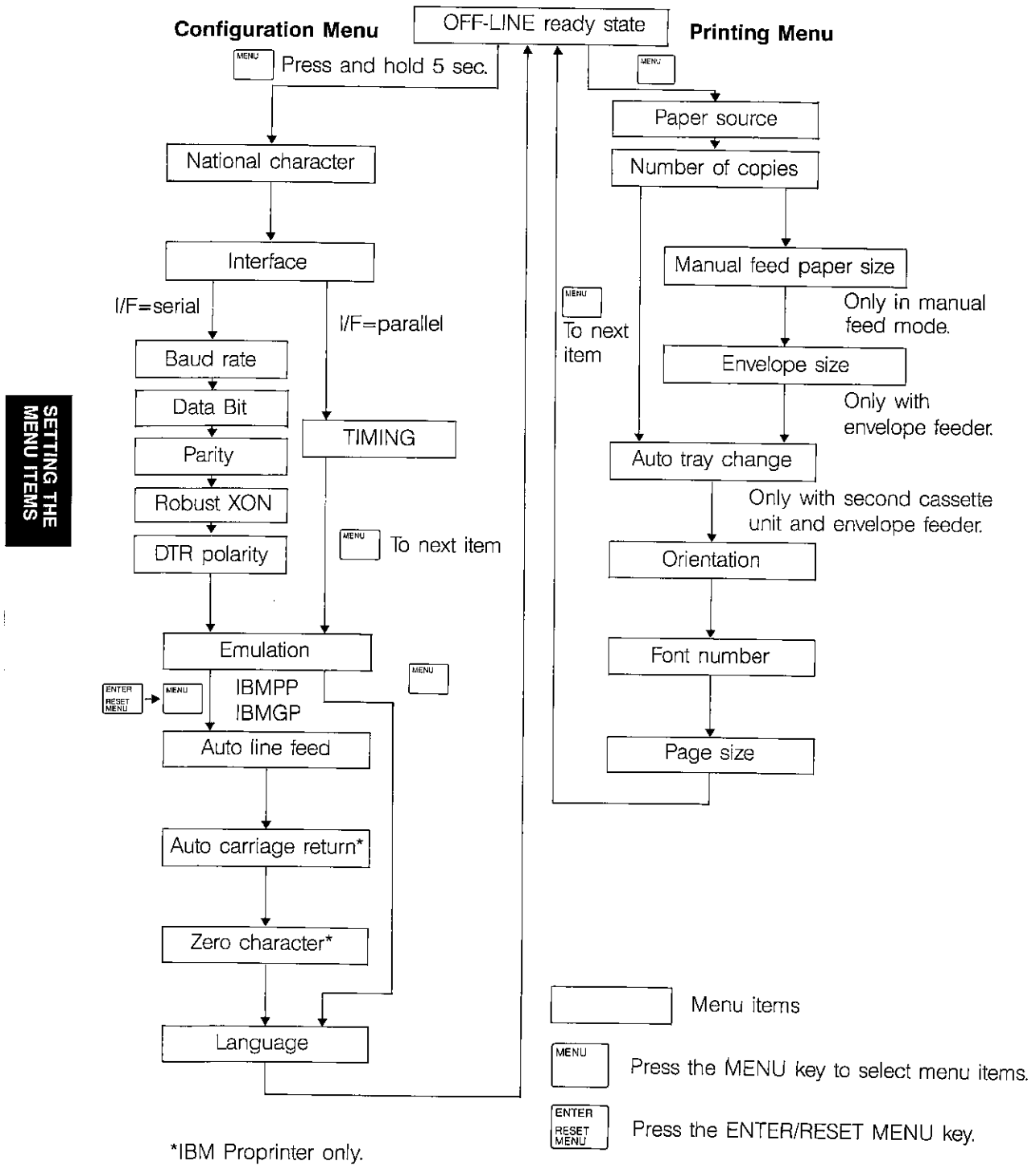
Configuration Menu Items

| Item | Printer Display | Selectable Value |
|-----------------------|-----------------|--|
| National character | NATIONAL=GLOBAL | GLOBAL (International) D/N (Denmark/Norway) |
| Interface | I/F=SERIAL | SERIAL, PARALLEL |
| Baud rate | BAUD RATE=9600 | 300, 600, 1200, 2400, 4800, 9600, 19200 |
| Data bit | DATA BIT=8 | 8, 7 |
| Parity | PARITY=NON | NON, EVN, ODD |
| Robust XON | ROBUST XON=ON | ON, OFF |
| DTR polarity | DTR POLARITY=HI | HI (High), LO (Low) |
| Timing | TIMING=1 | 1, 2, 3 |
| Emulation | EMULATION=IBMPP | HPLJ2, FX80, IBMPP, IBMGP, D630, HEX |
| Auto line feed | AUTO LF=OFF | OFF (CR=CR) ON (CR=CR+LF) |
| *Auto carriage return | AUTO CR=OFF | OFF LF=LF VT=VT ESCJ=ESCJ ON LF=LF+CR VT=VT+CR ESCJ=ESCJ+CR |
| *Zero character | ZERO="0" | "0", "ø" |
| Language | MESSAGE=ENGLISH | ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH |

*IBM Proprinter only.

MENU SETTING STRUCTURE

IBM Proprinter/Graphics Printer



Diablo 630/630 ECS Emulation

Printing Menu Items

| Item | Printer Display | Selectable Value |
|------------------------|-----------------|---|
| Paper source | TRAY=A4 | TRAY 1 MANUAL FEED TRAY 2* ENVELOPE FEED* |
| Number of copies | COPIES=01 | 01, 02 ... 99 |
| Manual feed paper size | MANUAL=A4 | LETTER, LEGAL, EXECUT, INVOIC, A4, B5, AFSP, COM-10, MONARC, DL, C5 |
| Envelope size | ENVELOPE=COM-10 | COM-10, MONARC, DL, C5 |
| Auto tray change | AUTO TRAY CHG=N | N (NO), Y (YES) |
| Orientation | ORIENTATION=P | P (Portrait) L (Landscape) |
| Font source | FONT SOURCE=I | I (Internal font) A (slot A) B (slot B) |
| Font number | FONT NUMBER=00 | International Font 00 (COURIER) Font Card (Options) <u>Diablo 630 (JX-9C1A)</u> 00 (Prestige Elite 12) 01 (Letter Gothic 12) 02 (Bold PS U.S.A.) 03 (Pica 10 U.S.A.) <u>Diablo 630 ECS</u> <u>(JX-9C3A)</u> 00 (Teletex Pica 10) 01 (Scientific Pica 10) |
| Page size | PG SIZE=NORMAL | NORMAL, EXTEND |

*Option

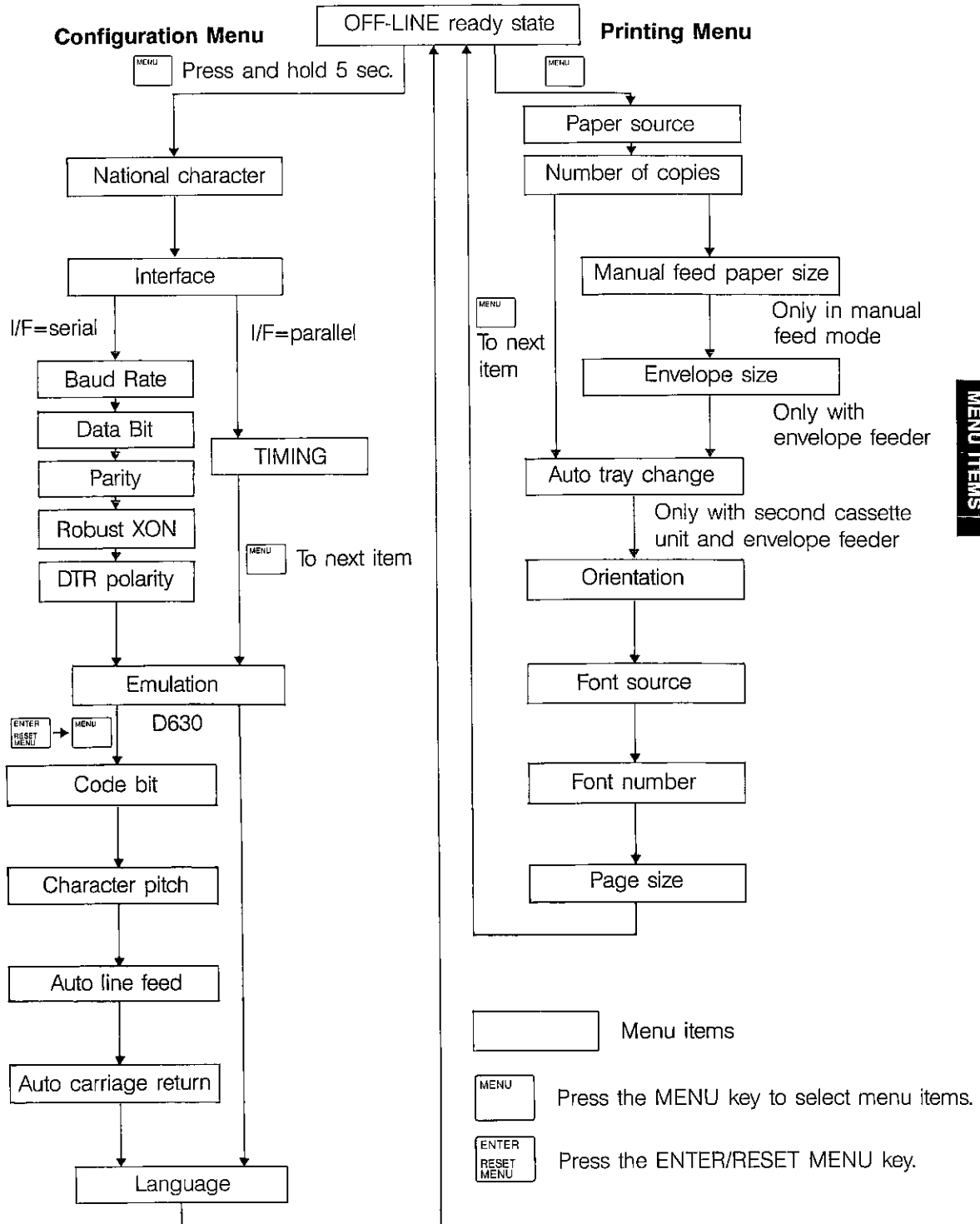
SETTING THE
MENU ITEMS

Configuration Menu Items

| Item | Printer Display | Selectable Value |
|----------------------|-----------------|---|
| National character | NATIONAL=U.S.A. | U.S.A., FRANCE, GERMNY, ENGLND, DNMRK1, SWEDEN, ITALY, SPAIN, JAPAN, NORWAY, DNMRK2 |
| Interface | I/F=SERIAL | SERIAL, PARALLEL |
| Baud rate | BAUD RATE=9600 | 300, 600, 1200, 2400, 4800, 9600, 19200 |
| Data bit | DATA BIT=8 | 8, 7 |
| Parity | PARITY=NON | NON, EVN, ODD |
| Robust XON | ROBUST XON=ON | ON, OFF |
| DTR polarity | DTR POLARITY=HI | Hi (High), LO (Low) |
| Timing | TIMING=1 | 1, 2, 3 |
| Emulation | EMULATION=D630 | HPLJ2, FX80, IBMPP, IBMGP, D630, HEX |
| Code bit | CODE BIT=7 | 7, 8 (bits) |
| Character pitch | CHR PITCH=10 | 10 (cpi), 12 (cpi), 15 (cpi), PS (pitch) |
| Auto line feed | AUTO LF=OFF | OFF (CR=CR) ON (CR=CR+LF) |
| Auto carriage return | AUTO CR=OFF | OFF (LF=LF) ON (LF=LF+CR) |
| Language | MESSAGE=ENGLISH | ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH |

MENU SETTING STRUCTURE

Diablo 630/630 ECS



HEX DUMP MODE

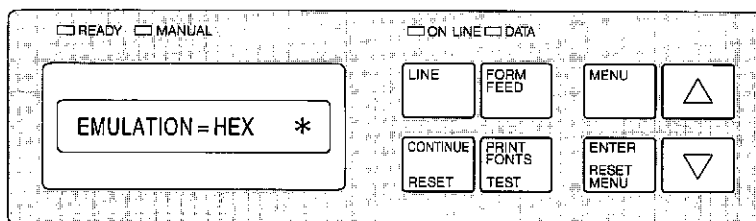
This feature (used mainly by programmers) prints the hexadecimal equivalent (ASCII code) of the incoming data.

An example of a hex dump printout is shown below.

| HEX CODE | | | | | | | | | | | | | | | | MESSAGE SENT | | | | | | | | | | | | | |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1B | 45 | 1B | 26 | 6C | 6C | 31 | 54 | 1B | 26 | 6C | 36 | 36 | 50 | 1B | 26 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 |
| 6C | 4F | 1B | 28 | 38 | 55 | 1B | 28 | 73 | 70 | 31 | 30 | 68 | 31 | 32 | 76 | 8080 | 8080 | 8080 | 8080 | 8080 | 8080 | 8080 | 8080 | 8080 | 8080 | 8080 | 8080 | 8080 | 8080 |
| 73 | 62 | 33 | 54 | 1B | 26 | 6C | 36 | 44 | 1B | 26 | 61 | 2D | 33 | 36 | 30 | sb3T | sb3T | sb3T | sb3T | sb3T | sb3T | sb3T | sb3T | sb3T | sb3T | sb3T | sb3T | sb3T | sb3T |
| 56 | 0A | 0A | 0A | 0A | 0A | 0A | 0D | 1B | 26 | 6B | 31 | 32 | 36 | 48 | 20 | VF | VF | VF | VF | VF | VF | VF | VF | VF | VF | VF | VF | VF | VF |
| 20 | 1B | 26 | 6B | 37 | 38 | 48 | 20 | 1B | 26 | 6B | 31 | 48 | 53 | 53 | 1B | 78H | 78H | 78H | 78H | 78H | 78H | 78H | 78H | 78H | 78H | 78H | 78H | 78H | 78H |
| 26 | 6B | 32 | 48 | 08 | 1B | 26 | 6B | 31 | 32 | 48 | 53 | 1B | 26 | 6B | 31 | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H |
| 48 | 4F | 4F | 1B | 26 | 6B | 32 | 48 | 08 | 1B | 26 | 6B | 31 | 32 | 48 | 4F | HO | HO | HO | HO | HO | HO | HO | HO | HO | HO | HO | HO | HO | HO |
| 1B | 26 | 6B | 31 | 48 | 46 | 46 | 1B | 26 | 6B | 32 | 48 | 08 | 1B | 26 | 6B | 1H | 1H | 1H | 1H | 1H | 1H | 1H | 1H | 1H | 1H | 1H | 1H | 1H | 1H |
| 31 | 32 | 48 | 46 | 1B | 26 | 6B | 31 | 48 | 54 | 54 | 1B | 26 | 6B | 32 | 48 | 12H | 12H | 12H | 12H | 12H | 12H | 12H | 12H | 12H | 12H | 12H | 12H | 12H | 12H |
| 08 | 1B | 26 | 6B | 31 | 32 | 48 | 54 | 1B | 26 | 6B | 31 | 48 | 2F | 2F | 1B | 2HT | 2HT | 2HT | 2HT | 2HT | 2HT | 2HT | 2HT | 2HT | 2HT | 2HT | 2HT | 2HT | 2HT |
| 26 | 6B | 32 | 48 | 08 | 1B | 26 | 6B | 31 | 32 | 48 | 2F | 1B | 26 | 6B | 31 | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H | 2H |

Procedure (Example using HP LaserJet series II emulation)

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press and hold the **MENU** key until "SYM.SET=ROMAN-8*" appears on the display to enter the Configuration Menu setting mode.
3. Press the **MENU** key again until "EMULATION=HPLJ2*" appears on the display.
4. Press the Δ or ∇ key to select "EMULATION=HEX".
5. Press the **ENTER/RESET MENU** key.
 - An asterisk (*) appears in the display.



6. Press the **MENU** key until "READY" appears on the display.
7. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display to save the setting.
 - "READY [HEX]T" appears on the display, and the ON LINE lamp lights.

Since all command codes such as line feed, form feed, etc. are converted to their hexadecimal equivalent, the Laser Printer does not execute these commands when they are received. Thus, the last page will not be printed, and data will remain in the print buffer. Use the following procedure to print the last page:

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press the **FORM FEED** key.

LINES PER PAGE

The lines per page will always default to the number given below when the printer is turned on.

Normal Size

| EMULATION | LPI* | ORIENTATION | PORTRAIT | | | | | | | | | |
|---|------|--------------|----------|-----|-----|----|-----|-----|-----|----|-----|----|
| | | PAPER SIZE** | LE | LL | EX | IN | A4 | B5 | CM | MO | C5 | DL |
| HP LaserJet series II | | 6 LPI | 60 | 78 | 57 | 45 | 64 | 54 | 51 | 39 | 48 | 46 |
| Epson FX-80 IBM Proprinter IBM Graphics Printer Diablo 630/630 ECS | | 6 LPI | 63 | 81 | 60 | 48 | 67 | 58 | 54 | 42 | 51 | 49 |
| | | 8 LPI | 84 | 108 | 80 | 64 | 90 | 77 | 72 | 56 | 68 | 65 |
| | | 12 LPI | 126 | 162 | 120 | 96 | 134 | 115 | 108 | 84 | 102 | 98 |

Normal Size

| EMULATION | LPI* | ORIENTATION | LANDSCAPE | | | | | | | | | |
|---|------|--------------|-----------|----|----|----|----|----|----|----|----|----|
| | | PAPER SIZE** | LE | LL | EX | IN | A4 | B5 | CM | MO | C5 | DL |
| HP LaserJet series II | | 6 LPI | 45 | 45 | 37 | 27 | 43 | 37 | 19 | 17 | 32 | 20 |
| Epson FX-80 IBM Proprinter IBM Graphics Printer Diablo 630/630 ECS | | 6 LPI | 48 | 48 | 40 | 30 | 46 | 40 | 21 | 20 | 35 | 23 |
| | | 8 LPI | 63 | 63 | 53 | 39 | 62 | 53 | 28 | 26 | 46 | 30 |
| | | 12 LPI | 95 | 95 | 80 | 59 | 92 | 79 | 42 | 39 | 69 | 45 |

Extended Size

| EMULATION | LPI* | ORIENTATION | PORTRAIT | | | | | | | | | |
|---|--------|--------------|----------|-----|-----|-----|-----|-----|-----|----|-----|-----|
| | | PAPER SIZE** | LE | LL | EX | IN | A4 | B5 | CM | MO | C5 | DL |
| Epson FX-80 IBM Proprinter IBM Graphics Printer Diablo 630/630 ECS | 6 LPI | | 66 | 84 | 63 | 51 | 70 | 60 | 57 | 45 | 54 | 51 |
| | 8 LPI | | 88 | 112 | 84 | 68 | 93 | 80 | 76 | 60 | 72 | 68 |
| | 12 LPI | | 132 | 168 | 126 | 102 | 140 | 120 | 114 | 90 | 108 | 102 |

Extended Size

| EMULATION | LPI* | ORIENTATION | LANDSCAPE | | | | | | | | | |
|---|--------|--------------|-----------|-----|----|----|----|----|----|----|----|----|
| | | PAPER SIZE** | LE | LL | EX | IN | A4 | B5 | CM | MO | C5 | DL |
| Epson FX-80 IBM Proprinter IBM Graphics Printer Diablo 630/630 ECS | 6 LPI | | 51 | 51 | 43 | 33 | 49 | 42 | 24 | 23 | 38 | 25 |
| | 8 LPI | | 68 | 68 | 58 | 44 | 65 | 56 | 32 | 30 | 51 | 34 |
| | 12 LPI | | 102 | 102 | 86 | 66 | 98 | 84 | 48 | 45 | 76 | 50 |

This mode can be used with the Epson FX-80, IBM Proprinter, IBM Graphics Printer and Diablo 630/630 ECS emulations.

* LPI ... line per inch

** Paper size LE ... Letter
 LL ... Legal
 EX ... Executive
 IN ... Invoice
 CM... Commercial 10 (Business)
 MO... Monarch
 C5 ... International C5
 DL ... International DL

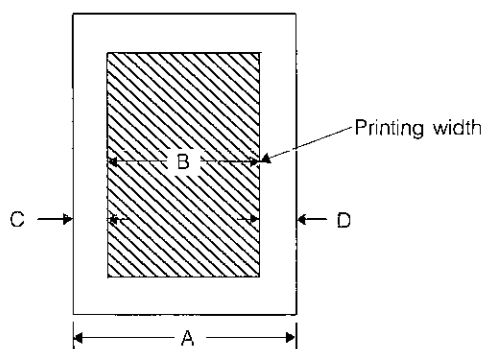
PRINTING WIDTH

In the portrait mode, the printing width for each paper size is as shown below.

The maximum printing width on A4 size paper is 2,400 dots, allowing 80 characters to be printed on one line at 10 cpi.

NOTE

When printing 80 characters/line on A4 size paper, in some cases characters may print beyond the paper edge. Avoid printing 80 characters/line on A4 size paper and reduce the number of characters per line.



(Unit: dots)

| Paper Size | A | B | C | D |
|--------------------|------|------|----|-----|
| LETTER | 2550 | 2400 | 50 | 100 |
| LEGAL | 2550 | 2400 | 50 | 100 |
| EXECUTIVE | 2175 | 2025 | 50 | 100 |
| INVOICE | 1650 | 1500 | 50 | 100 |
| A4 (HPLJII) | 2480 | 2338 | 50 | 92 |
| A4 (HPLJII) 80 CHR | 2480 | 2400 | 50 | 30 |
| A4 (4EMUL) | 2480 | 2400 | 50 | 30 |
| B5 | 2149 | 2007 | 50 | 92 |
| COM-10 | 1237 | 1087 | 50 | 100 |
| MONARCH | 1162 | 1012 | 50 | 100 |
| C5 | 1913 | 1771 | 50 | 92 |
| DL | 1299 | 1157 | 50 | 92 |

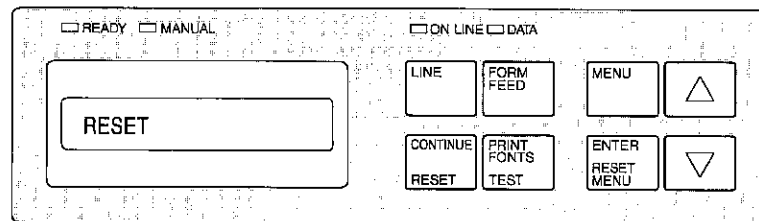
RESETTING THE LASER PRINTER

The Laser Printer can be reset to the panel default settings or its factory default settings with the procedure below.

Panel Default Settings

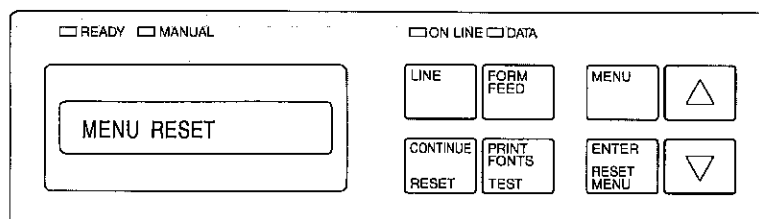
Many software packages send printer commands which will override the panel default settings. Reset the printer at the start of each job to ensure that the panel default settings are in effect.

1. Press the **LINE** key to set the Laser Printer off-line.
2. Press and hold the **CONTINUE/RESET** key until "RESET" appears on the display.
 - The Laser Printer is reset to the settings made through the Printing Menu.
 - In the HP LaserJet series II emulation, temporary soft fonts and temporary macros are reset.
 - Stored page data is cleared.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamps lights.



Factory Default Settings

1. Press the **LINE** key to set the Laser Printer off-line.
 - If the Laser Printer is still printing, the ON LINE lamp blinks. Wait until the ON LINE lamp turns off.
2. Press and hold the **ENTER/RESET MENU** key until "MENU RESET" appears on the display.
 - All items in the Printing Menu and some items in the Configuration Menu are initialized.
 - In the HP LaserJet series II emulation, temporary soft fonts and temporary macros are reset.
 - Stored page data is cleared.
 - "READY [LJ2]T" appears on the display, and the ON LINE lamps lights.



Factory Default Settings

| Item | Default Settings | HP | FX | PP | GP | D6 |
|----------------------|------------------|----|----|----|----|----|
| Paper source | TRAY 1 | ○ | ○ | ○ | ○ | ○ |
| Number of copies | 1 | ○ | ○ | ○ | ○ | ○ |
| Auto tray change | OFF | ○ | ○ | ○ | ○ | ○ |
| Font source | Internal | ○ | | | | ○ |
| Font number | 0 | ○ | ○ | ○ | ○ | ○ |
| Form length | See table below. | ○ | | | | |
| Orientation | Portrait | | ○ | ○ | ○ | ○ |
| Page size | Normal | | ○ | ○ | ○ | ○ |
| Auto line feed | OFF | | ○ | ○ | ○ | ○ |
| Zero character | 0 | | ○ | ○ | | |
| Auto carriage return | OFF | | | ○ | | ○ |
| Code bit | 7 bit | | | | | ○ |
| Character pitch | 10 cpi | | | | | ○ |

| Paper Size | Form Length |
|------------|---------------|
| LETTER | 60 lines/page |
| LEGAL | 78 |
| EXECUTIVE | 57 |
| INVOICE | 45 |
| A4 | 64 |
| B5 | 55 |

NOTES

- "○" indicates items that are reset to Default Settings in each emulation.
- Interface, emulation, symbol set, national character, manual feed paper size, envelope size, and timing are not reset, but remain at their current settings.

FONTS

Three types of fonts can be used with your Laser Printer: resident fonts, card fonts, and downloadable fonts (soft fonts).

Resident Fonts

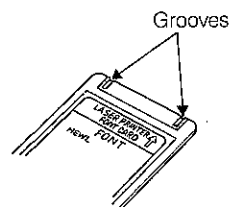
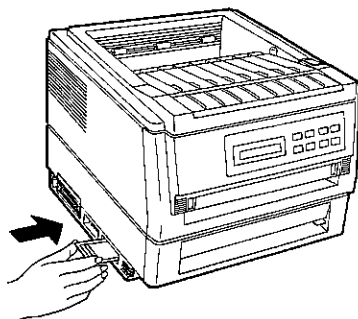
The fonts that can be used in each emulation mode are given below. See the character set printouts in the APPENDIX, pages 102 to 106.

| | |
|-----------------------|---|
| HP LaserJet Series II | Courier, courier bold, line printer |
| Epson FX-80 | Courier, script, elite, elite script, condense, condense script |
| IBM Proprinter | Courier, script, elite, elite script, condense, condense script |
| IBM Graphics Printer | Courier, script, condense, condense script |
| Diablo 630 | Courier |

Font Card

Credit card sized font cards for expansion fonts are available as options. See OPTIONS AND SUPPLIES, pages 94 to 96.

To use a font card, insert it face up into a font card slot (A or B) located on the left side of the Laser Printer. The font card's top face has two grooves on the end which is inserted first.



CAUTION

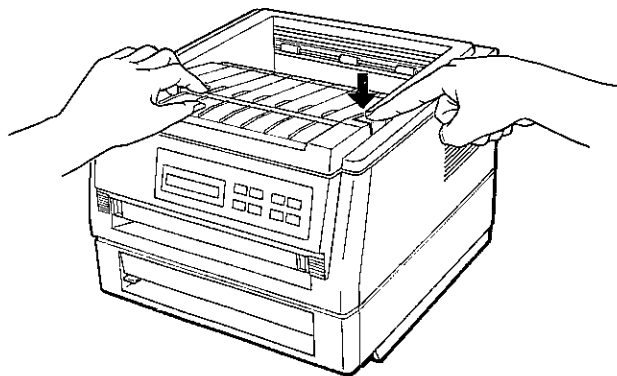
Be sure to insert or remove the font card while the ON LINE lamp and the DATA lamp are off. Inserting or removing the font card while these lamps are either lit or blinking may result in erratic printing or hardware errors.

5. GENERAL INFORMATION

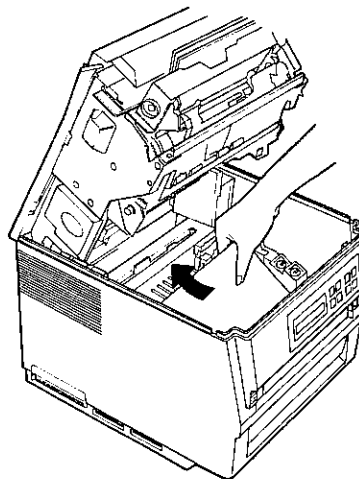
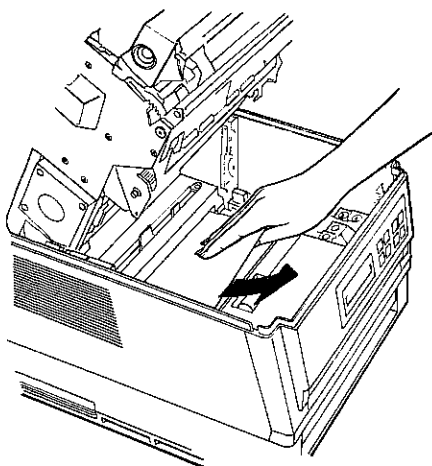
MISFEED REMOVAL

The Laser Printer stops when a misfeed occurs. The display will show "PAPER JAM". After removing the misfed paper and clearing the paper jam error, the page that jammed will be reprinted. In some cases, two pages which were in the Laser Printer mechanism at the time of the paper jam (the one being printed and the other one being ejected) are reprinted. Therefore, a page that was already printed — the one that was not misfed — may also be reprinted in addition to the misfed paper.

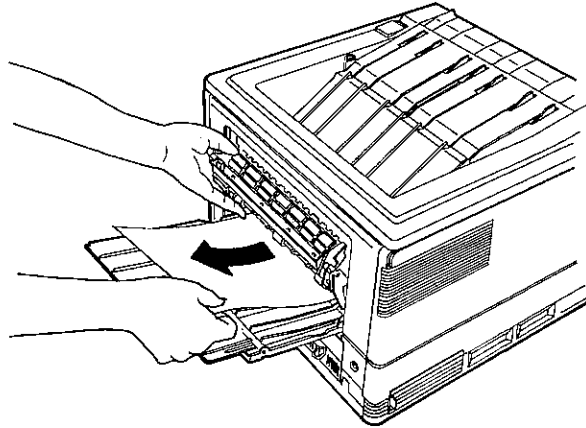
1. Press the **upper unit release button** to open the Laser Printer.



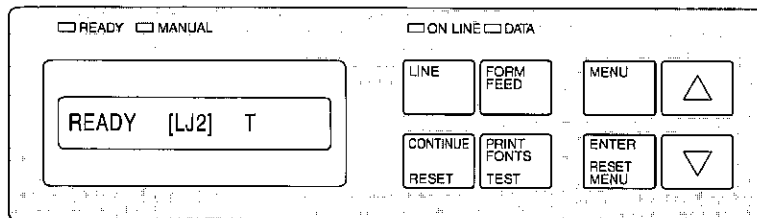
2. Remove the misfed paper.



- If no paper is found:
Check the paper cassette for misfed paper.
Open the face up tray and lift the paper guide to check for misfed paper.



3. Close the Laser Printer, press the **CONTINUE/RESET** key.
- The ON LINE lamp lights, "READY [LJ2]T" appears on the display, and when "READY" stops blinking, printing can continue.



CAUTIONS

- If the paper is torn while it is being removed, be sure to remove all pieces. To minimize torn pieces, slowly and carefully remove misfed paper.
- Be careful not to damage the photoconductive drum or transfer charger wires. For this reason, do not use pointed or sharp tools to remove misfed paper.
- Be careful not to touch the fusing area as it is hot.

SUPPLIES REQUIRED

Toner Kit Required

When the display shows "REPL. TONER KIT", the toner cartridge should be replaced. At the same time, the toner collecting container and the roller cleaner must also be replaced.

The toner cartridge replacement kit includes a toner cartridge, toner collecting container, and roller cleaner.

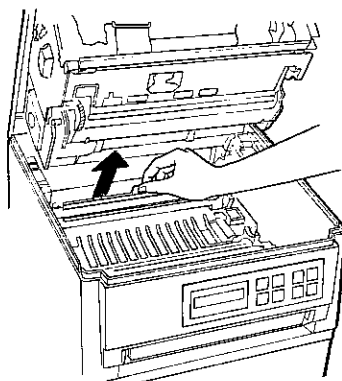
1. Press the **upper unit release button** to open the Laser Printer.
2. Remove the used roller cleaner from the top of the fusing unit.

CAUTION

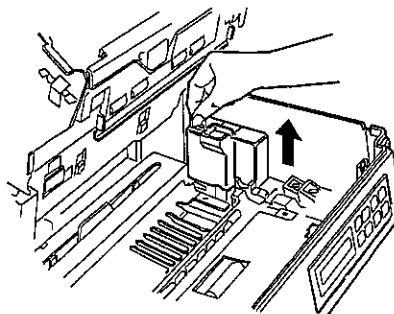
The fusing unit is hot.

Exercise care and hold only the green knob of the roller cleaner.

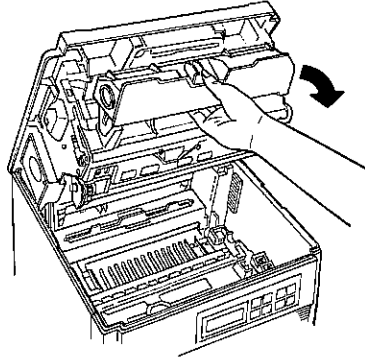
Also do not touch the photoconductive drum.



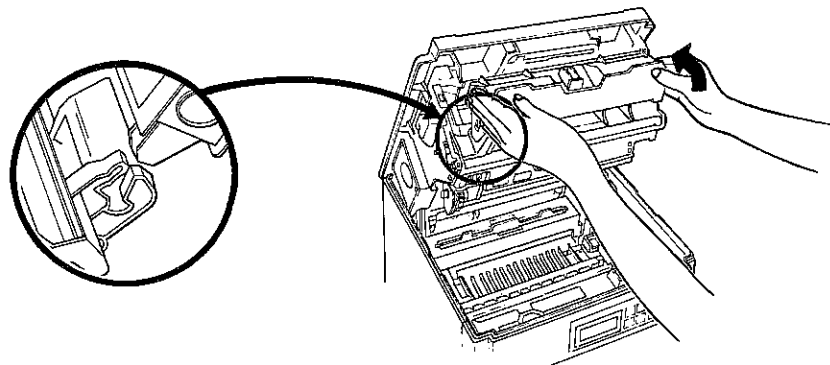
3. Remove the new roller cleaner from its plastic bag and install it on top of the fusing unit.
4. Remove the full toner collecting container and install the new toner collecting container.
- Place the full toner collecting container into the plastic bag of the new toner collecting container; seal and dispose of properly.



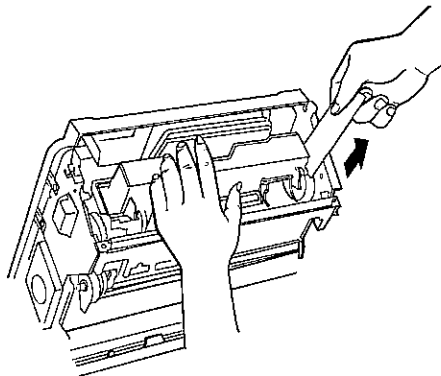
5. Lift up the green lock plate on the top side of the toner cartridge and rotate and pull out to detach it from the developer cartridge.



6. Shake the new toner cartridge horizontally four or five times to loosen the toner.
7. Align the toner cartridge slots with the developer cartridge hooks and rotate until it clicks and is securely attached.



8. Hold the toner cartridge in place and pull out the sealing tape from the toner cartridge to release toner into the developer cartridge. With the upper unit in a fully upright position, tap on the toner cartridge four or five times with the upper unit in a fully upright position.

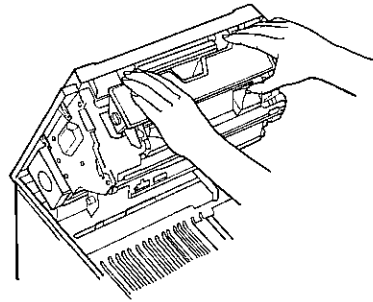


9. Close the Laser Printer.

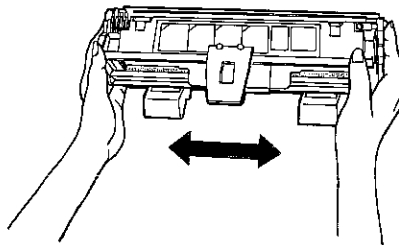
Developer Cartridge Required

When the display shows "REPL. DEVELOPER", the developer cartridge should be replaced. Note that the toner cartridge, toner collecting container, and roller cleaner must also be replaced at the same time.

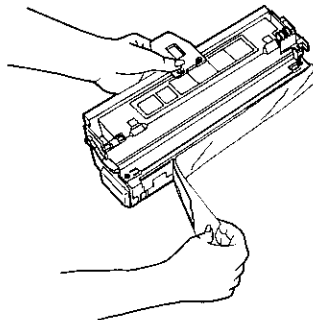
1. Press the **upper unit release button** to open the Laser Printer.
2. Press the green levers on the developer cartridge with both hands and pull out the toner and developer cartridges together.



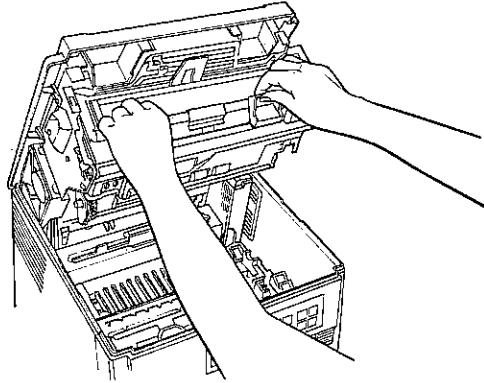
3. Remove the new developer cartridge from the plastic bag. Place the old developer and toner cartridges into the plastic bag, seal and dispose of properly.
4. Remove the protective plastic cover.
5. Shake the new developer cartridge vigorously in a horizontal direction four or five times.



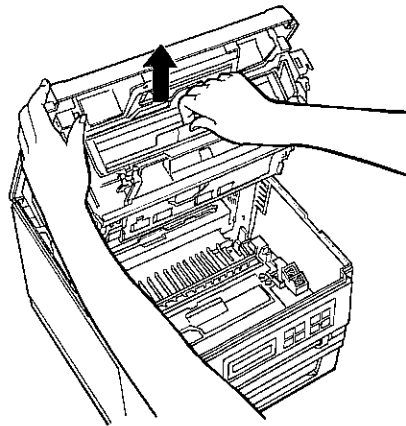
6. Place the developer cartridge on a level surface, hold it in place, and remove the covering material.
 - Be careful not to touch the developer roller.
 - Do not remove the sealing plate on the other side of the developer cartridge.



7. Press the green levers on the developer cartridge with both hands and slide it into the Laser Printer along the guides.



8. Remove the tape securing the sealing plate and pull out the sealing plate.

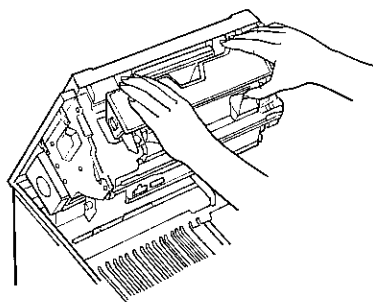


9. Install the new toner kit.
● For installation procedure, see page 70.
10. Close the Laser Printer.

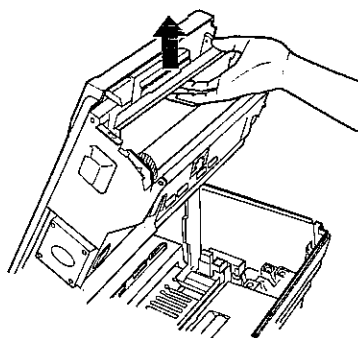
Photoconductor Cartridge Required

When the display shows "REPL. PHOTO. DRUM", the photoconductor cartridge and ozone filter should be replaced.

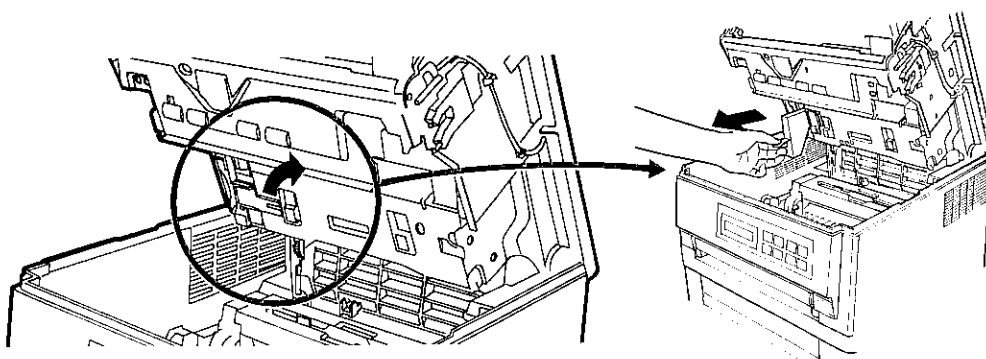
1. Press the **upper unit release button** to open the Laser Printer.
2. Press the green levers on the developer cartridge with both hands and pull out the toner and developer cartridges together.



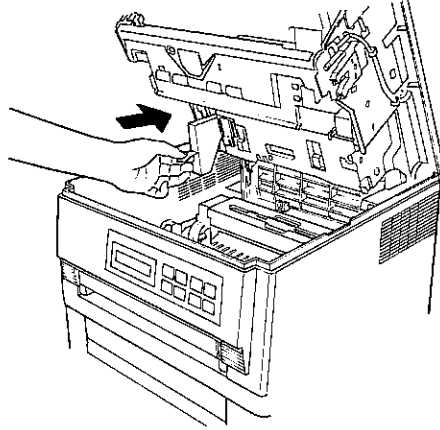
3. Hold the frame of the photoconductor cartridge and pull it out along the guides.



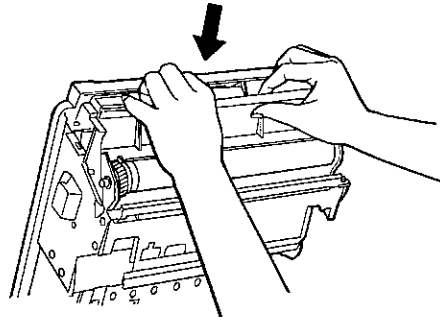
4. Turn the green stopper clockwise and remove the ozone filter.



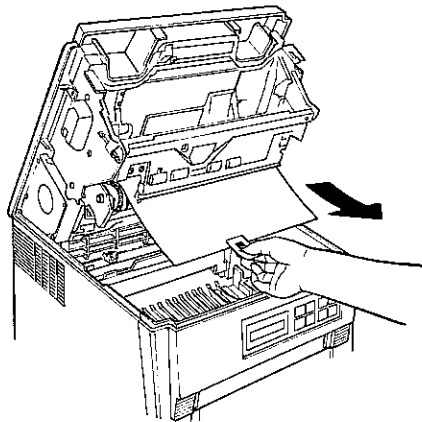
5. Remove the new ozone filter from the top of the packing material, remove from the plastic bag, and insert it into the Laser Printer. Turn the green stopper back into place.



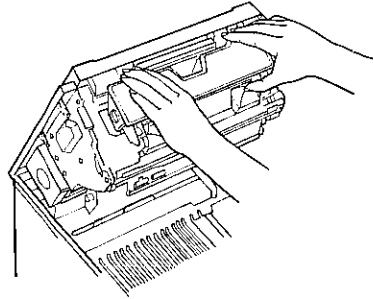
6. Remove the new photoconductor cartridge from the plastic bag. With the photoconductor drum facing down, fully insert the photoconductor cartridge, sliding it along the guides.



7. Hold the photoconductor cartridge and pull the green tab to remove the protective sheet. Be sure not to leave any torn pieces in the Laser Printer.



8. Reinstall the developer and toner cartridges.



9. Close the Laser Printer.

Paper Required

When the display shows "PAPER OUT TRAY1", pull out the paper cassette in use.

If it is empty, load paper in the cassette (see **LOADING PAPER**, page 16).

The "PAPER OUT TRAY1" message will go out after inserting a refilled paper cassette into the Laser Printer.

If paper is in the cassette, see **MISFEED REMOVAL**.

SERVICE REQUIRED

When the following messages appear on the display, service by an authorized Sharp Service Technician is required. Contact your service center as soon as possible.

| DISPLAY | MEANING |
|-----------------|-------------------------|
| SERVICE (C1) | Optical System Error |
| SERVICE (C2) | Main Motor Defective |
| SERVICE (C3) | Polygon Motor Defective |
| SERVICE (C4) | High Heater Temperature |
| SERVICE (C5) | Low Heater Temperature |
| SERVICE (C6) | Thermistor Open |
| SERVICE (C7-C9) | (Reserved) |

| DISPLAY | MEANING |
|-----------------|---------------------------------|
| SERVICE (E1) | ICU ROM Checksum Error |
| SERVICE (E2) | ICU RAM Read/Write Error |
| SERVICE (E3) | Expansion Memory Error |
| SERVICE (E4) | ICU Hardware Read/Write Error |
| SERVICE (E5) | Non-volatile RAM Checksum Error |
| SERVICE (E6-E9) | (Reserved) |

| DISPLAY | MEANING |
|-----------------|-----------------------------|
| SERVICE (P1) | PCU ROM Checksum Error |
| SERVICE (P2) | PCU RAM Read/Write Error |
| SERVICE (P3) | Non-volatile RAM Read Error |
| SERVICE (P4) | Serial Communication Error |
| SERVICE (P5-P6) | (Reserved) |

USER MAINTENANCE

The maintenance procedures that are to be performed by the user are given below.

Cleaning the Cabinet

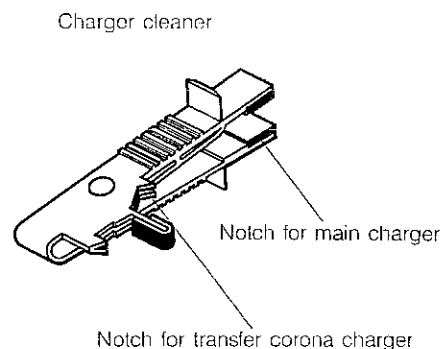
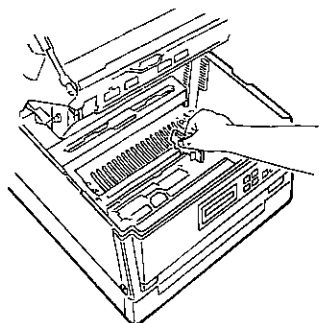
When the Laser Printer cabinet becomes dirty or stained, wipe with a soft, clean cloth. If necessary, dampen the cloth with water. Do not use thinner, benzene, or similar volatile cleaning agents.

Cleaning the Corona Wires

If the printouts are blotchy or streaky, dirty corona wires may be the cause.

Transfer corona charger

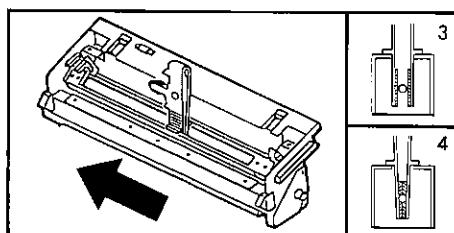
1. Turn off the power.
2. Press the **upper unit release button** to open the Laser Printer.
3. Slide the charger cleaner with the notch for the transfer corona charger resting on the wire case as shown below.



GENERAL
INFORMATION

Main charger

1. Carefully pull out the toner and developer cartridges.
2. Carefully pull out the photoconductor cartridge and place it on a level surface. DO NOT TOUCH THE PHOTOCONDUCTOR DRUM.
3. Open the tip of the charger cleaner as shown in the figure and insert it in the corona wire case.



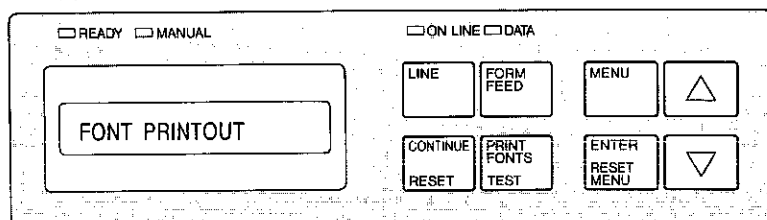
- Note that inserting the charger cleaner with its tip closed may break and damage the corona wire.
4. Close the tip of the charger cleaner and slide it only in the direction of the arrow three to five times.
 5. Open the tip of the charger cleaner to remove it from the corona wire case.
 6. Reinstall the photoconductor cartridge, toner and developer cartridges, and close the Laser Printer.
- Store the charger cleaner with the supplies. Do not leave it inside the printer.

PRINTOUT FUNCTION

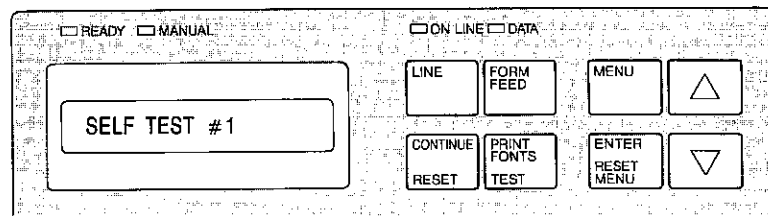
There are three printout functions: test printout, menu setting list, and font list.

Executing the Printout Function

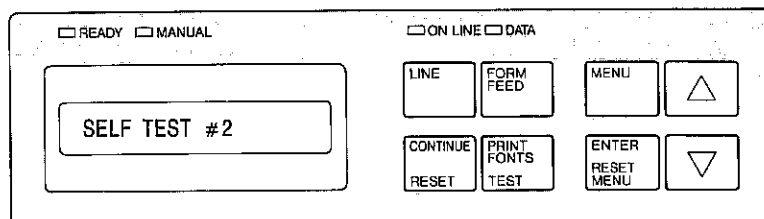
1. Press the **power switch** to turn on the power.
 - "WARMING UP" appears on the display.
 - The ON LINE lamp lights, the READY lamp lights, and "READY [LJ2]T" appears on the display. In about 60 seconds, "READY" stops blinking.
2. Press the **LINE key** to set the printer off-line.
 - The ON LINE lamp turns off.
3. Press the **PRINT FONTS/TEST key** to select the desired printout function.
 - To select FONT PRINTOUT, press this key once so that "FONT PRINTOUT" appears on the display.



- To select SELF-TEST #1, press and hold the key until "SELF TEST #1" appears on the display.



- To select SELF-TEST #2, press and hold the key until "SELF TEST #2" appears on the display.



- The DATA lamp lights and the selected function is printed out.
4. When printout is completed, press the **LINE key** to set the Laser Printer on-line.

GENERAL INFORMATION

During HP LaserJet series II emulation, this function prints out the font list. The font number and symbol set, pitch, etc. are printed out for the available fonts.

JX-9C4M (JX-9C5M) font card is in the A slot and JX-9C4A (JX-9C5A) font card is in the B slot.

Font List For HP LaserJet series II

ABCdef#\$@[\]
ABCdef#\$@[\]
ÀÂ°ÇÑ¡¿£§

SAMPLE

Font List For HP LaserJet series II

| FONT No. | NAME | | FONT SYMBOL ID SET | PITCH | POINT SIZE | PRINT SAMPLE |
|--|--------------|------|-----------------------|-------|---------------|---|
| <u>INTERNAL FONTS</u> <u>FONT SOURCE (I)</u> | | | | | | |
| 06 | COURIER | Bold | 11U | 10.0 | 12.0 | ABCdef#\$\$@[\]^`{ }~12 16 +--+--+--+--+--+--+--+--+--+ |
| 07 | COURIER | Bold | 0N | 10.0 | 12.0 | ABCdef#\$\$@[\]^`{ }~12 ic' " , ' »½AÆEfiDðö×øÙ |
| 08 | LINE PRINTER | | 8U | 16.7 | 8.5 | ABCdef#\$\$@[\]^`{ }~12 AA'CŃıŁfSəəəəəAəəəKÜ |
| 09 | LINE PRINTER | | 10U | 16.7 | 8.5 | ABCdef#\$\$@[\]^`{ }~12 16 +--+--+--+--+--+--+--+--+--+ |
| 10 | LINE PRINTER | | 11U | 16.7 | 8.5 | ABCdef#\$\$@[\]^`{ }~12 16 +--+--+--+--+--+--+--+--+--+ |
| 11 | LINE PRINTER | | 0N | 16.7 | 8.5 | ABCdef#\$\$@[\]^`{ }~12 ic' " , ' »½AÆEfiDðö×øÙ |
| 12 | COURIER | | 8U | 10.0 | 12.0 | A B C D e f # \$ % & ' / ~ A Ä Å Ö Ø Æ Ç È É Ê Ë Ì Í Î Ï |
| 13 | COURIER | | 10U | 10.0 | 12.0 | A B C D e f # \$ % & ' / ~ İ Œ ———— Œ ———— İ Œ |
| 14 | COURIER | | 11U | 10.0 | 12.0 | A B C D e f # \$ % & ' / ~ İ Œ ———— Œ ———— İ Œ |
| 15 | COURIER | | 0N | 10.0 | 12.0 | A B C D e f # \$ % & ' / ~ ı Ł Ą ą ę ą ł ą ł ą ł ą ł ą ł |
| 16 | COURIER | Bold | 8U | 10.0 | 12.0 | A B C D e f # \$ % & ' / ~ A Ä Å Ö Ø Æ Ç È É Ê Ë Ì Í Î Ï |
| 17 | COURIER | Bold | 10U | 10.0 | 12.0 | A B C D e f # \$ % & ' / ~ İ Œ ———— Œ ———— İ Œ |
| 18 | COURIER | Bold | 11U | 10.0 | 12.0 | A B C D e f # \$ % & ' / ~ İ Œ ———— Œ ———— İ Œ |
| 19 | COURIER | Bold | 0N | 10.0 | 12.0 | A B C D e f # \$ % & ' / ~ ı Ł Ą ą ę ą ł ą ł ą ł ą ł ą ł |
| 20 | LINE PRINTER | | 8U | 16.7 | 8.5 | A B C D e f # \$ % & ' / ~ A Ä Å Ö Ø Æ Ç È É Ê Ë Ì Í Î Ï |
| 21 | LINE PRINTER | | 10U | 16.7 | 8.5 | A B C D e f # \$ % & ' / ~ İ Œ ———— Œ ———— İ Œ |
| 22 | LINE PRINTER | | 11U | 16.7 | 8.5 | A B C D e f # \$ % & ' / ~ İ Œ ———— Œ ———— İ Œ |
| 23 | LINE PRINTER | | 0N | 16.7 | 8.5 | A B C D e f # \$ % & ' / ~ ı Ł Ą ą ę ą ł ą ł ą ł ą ł ą ł |

GENERAL INFORMATION

Epson FX-80 emulation
 IBM Proprinter emulation
 IBM Graphics Printer emulation
 Diablo 630/630 ECS emulations

In these emulations, the font number and all the characters in the resident font or the font card for each emulation are printed out.

SAMPLE

Font List For FX-80

National Character = U.S.A.

| FONT No. | NAME | PRINT SAMPLE |
|-------------|--------------------|---|
| 00 | COURIER | !"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNQRSTUUVW XYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ !"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGH IJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ |
| 01 | CONDENSE | !"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNQRSTUUVW XYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ !"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGH IJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ |
| 02 | EMPHASIZE | !"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNQRSTUUVW XYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ !"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGH IJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ |
| 03 | CONDENSE EMPHASIZE | !"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNQRSTUUVW XYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ !"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGH IJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ |

SAMPLE

Font List For IBM Proprietary

National Character = Global

| FONT No. | NAME | PRINT SAMPLE |
|-------------|-----------------|---|
| 00 | CHARACTER SET 1 | <p>!"#\$%&'()*+,-./01234567 89:;<=>?@ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ pqrstuvwxyz{ }~ ¡ ¢ £ ¤ ¥ ¦ § ¨ © ª « ¬ ® ¯ ° ± ² ³ ´ µ ¶ · ¸ ¹ º » ¼ ½ ¾ À Á Â Ã Ä Å Æ Ç È É Ê Ë Ì Í Î Ï Ñ Ò Ó Ô Õ Ö × Ø Ù Ú Û Ü Ý Þ ß à á â ã</p> |
| 01 | CHARACTER SET 2 | <p>!"#\$%&'()*+,-./01234567 89:;<=>?@ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ pqrstuvwxyz{ }~ ¡ ¢ £ ¤ ¥ ¦ § ¨ © ª « ¬ ® ¯ ° ± ² ³ ´ µ ¶ · ¸ ¹ º » ¼ ½ ¾ À Á Â Ã Ä Å Æ Ç È É Ê Ë Ì Í Î Ï Ñ Ò Ó Ô Õ Ö × Ø Ù Ú Û Ü Ý Þ ß à á â ã</p> |

GENERAL INFORMATION

SAMPLE

Font List For IBM Graphics Printer

National Character = Global

| FONT No. | NAME | PRINT SAMPLE |
|-------------|-----------------|---|
| 00 | CHARACTER SET 1 | <p>!"#\$%&'()*+,-./01234567 89:;<=>?@ABCDEFGHIJKLMN O PQRSTU VWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ ¡ ¢ £ ¤ ¥ ¦ § ¨ © ª « ¬ ® ¯ ° ± ² ³ ´ µ ¶ · ¸ ¹ º » ¼ ½ ¾ À Á Â Ã Ä Å Æ Ç È É Ê Ë Ì Í Î Ï Ñ Ò Ó Ô Õ Ö × Ø Ù Ú Û Ü Ý Þ ß à á â ã</p> |
| 01 | CHARACTER SET 2 | <p>!"#\$%&'()*+,-./01234567 89:;<=>?@ABCDEFGHIJKLMN O PQRSTU VWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{ }~ ¡ ¢ £ ¤ ¥ ¦ § ¨ © ª « ¬ ® ¯ ° ± ² ³ ´ µ ¶ · ¸ ¹ º » ¼ ½ ¾ À Á Â Ã Ä Å Æ Ç È É Ê Ë Ì Í Î Ï Ñ Ò Ó Ô Õ Ö × Ø Ù Ú Û Ü Ý Þ ß à á â ã</p> |

GENERAL INFORMATION

Font List For Diablo 630/ECS

National Character = U.S.A.

Menu Setting List (SELF-TEST #1)

This function prints out the settings of the Printing Menu, Configuration Menu and other settings. It also prints out the remaining life of the supplies and printer. A sample printout of the menu settings is shown below.

SAMPLE

| MENU SETTING LIST | |
|--------------------|-------------------------|
| Printing Menu | |
| Paper Source | = Tray |
| Copies | = 1 |
| Font Source | = Internal Font |
| Font Number | = 00 |
| Form Length | = 60 Lines |
| Line Format | = 77 |
| Configuration Menu | |
| Symbol Set | = ROMAN-8 |
| Interface | = Parallel |
| Timing | = 1 |
| Emulation | = HP LaserJet series II |
| Message | = English |
| Other Information | |
| Tray Paper Size | = Letter |
| Current Font ID | = None |
| Current Typeface | = COURIER |
| Program ROM | = EPR1A,EPR2A |
| Internal Font ROM | = ICG1A,ICG2A |
| PCU-Firmware | = PCU-I |
| Installed Memory | = 512 KBytes |
| Life Count | |
| Machine | = 1 Sheets |
| Photoconductor | = 1 Sheets |
| Developer | = 1 Sheets |

Test Printout (SELF-TEST #2)

The purpose of this printout function is to verify that the Laser Printer is working properly. A full sheet of a test pattern using the internal character set is printed out. The figure below shows a portion of this sheet. A line border encloses the printing area on the page.

SAMPLE

```
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_
'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`
`()+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`a
)+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`ab
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abc
+,,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcd
+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcde
,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcde
-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdef
./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefg
/0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefgh
0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghi
123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghij
23456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijk
3456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijkl
456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklm
56789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmn
6789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmno
789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnop
89:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopq
9:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr
:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrs
;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrst
<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstu
=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvw
?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwx
@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxy
ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
```

PRINTER TROUBLE?

Errors

When any of the following error messages appears on the display, remedy the error condition following the procedure below.

| Error Message | Description | Remedy |
|--|--|---|
| INPUTBUFFER FULL | The host computer ignores the printer's busy state and continues to send data. | Check the protocol signal line between the printer and the host computer or adjust the setting. Press the CONTINUE/RESET key. |
| COVER OPEN | Upper unit of printer is not closed properly. | Close the upper unit firmly and check that it is properly latched. Press the CONTINUE/RESET key. |
| INTERFACE ERROR | RS-232C interface error (For example, framing error.) | Check the RS-232C interface function and execute it again. Press the CONTINUE/RESET key. |
| DATA LOSS ERROR | Too many characters on one line. | Delete excess characters and execute again. Press the CONTINUE/RESET key. |
| PAPER OUT TRAY *** (*** = TRAY1 TRAY2) | Paper empty or paper cassette removed. | Add paper or replace the paper cassette. If the paper size matches the previous setting, the printer will return on-line. See LOADING PAPER, page 16. |
| PAPER JAM | Paper is jammed. | Open the cover and remove the misfed paper. Press the CONTINUE/RESET key. See MISFEED REMOVAL, page 68. |
| REPL. DEVELOPER | End of developer cartridge life. | Replace the developer cartridge. See SUPPLIES REQUIRED, page 72. |

| Error Message | Description | Remedy |
|----------------------|--|---|
| REPL. PHOTO. DRUM | End of photoconductor cartridge life. | Replace the photoconductor cartridge. See SUPPLIES REQUIRED, page 74. |
| REPL. TONER KIT | Toner cartridge is almost empty. | Replace with a new toner kit. See SUPPLIES REQUIRED, page 70. |
| REPL. TONER COLL. | <p>Toner collecting container is not installed properly.</p> <p>Toner cartridge was not replaced when the "REPL. TONER KIT" was displayed.</p> <p>Toner collecting container was not replaced when the toner cartridge was replaced.</p> | <p>Install the toner collecting container properly.</p> <p>Replace with a new toner kit. See SUPPLIES REQUIRED, page 70.</p> <p>Replace the toner collecting container.</p> |
| DATA MEMORY FULL | <p>If on-line and printing, printing will continue on to the next page.</p> <p>While entering soft font or macro, the printer goes off-line.</p> | <p>When space becomes available in the user memory, press the CONTINUE/RESET key.</p> <p>Option 1: Press the CONTINUE/RESET key. The soft font or macro being entered prior to going off-line is deleted and the printer goes back on-line.</p> <p>Option 2: Press and hold the CONTINUE/RESET key until "RESET" appears on the display. All temporary soft fonts and macros are deleted and the printer goes back on-line.</p> |

User Troubleshooting

Before calling for service, try the remedies given below.

Laser Printer does not turn on

- Laser Printer plugged in?
Plug the Laser Printer into a grounded outlet.
- Power switch on?
Turn the power switch on.

Laser Printer turns on but does not print data from computer

- Is Laser Printer on-line?
Press the LINE key.
- Is interface cable connected properly?
Connect the interface cable. Also check that the proper interface mode is selected.
- Is there an error message on the display?
Clear error according to procedures in previous section.
- Is the DATA lamp blinking?
Press the LINE key to set the printer off-line and then press the FORM FEED key. See page 21 for more information.

Laser Printer prints blank pages

- Are all supplies installed?
Install the supplies. See SUPPLIES REQUIRED, page 70.

Streaky, blotchy printout or dark line in printout

- Corona wires dirty?
Clean corona wires. See USER MAINTENANCE, page 78.

Dirty printout

- Was the roller cleaner replaced at the time of toner replacement?
Replace the roller cleaner.

Frequent paper jams

- Was paper fanned before loading?
Fan paper and reload.
- Is cassette overloaded?
Remove some paper from cassette.
- Paper too heavy?
Check specifications for types of paper.
- Paper damp?
Replace with dry paper. Be sure to store paper in a dry location.

SHIPPING INSTRUCTIONS

Follow the procedure below whenever transporting or shipping the Laser Printer.

1. Press the **upper unit release button** to open the Laser Printer.
2. Remove the toner, developer, and photoconductor cartridges and the toner collecting container.

NOTE:

Any time the photoconductor cartridge is removed from the printer, it must be put in the black plastic bag included with the original packing materials. This is required to prevent the photoconductor from being overexposed to ambient light.

3. Remove the paper from the paper cassette, and secure the pressure plate with tape.
4. Close the Laser Printer.
5. Pack the printer, reversing the order of UNPACKING instructions on page 1.

NOTES:

1. When returning the printer for repair include:
 - A) A written explanation of the problem encountered.
 - B) Any print samples which may help in diagnosing the problem.
2. Do not include any cartridges (toner, developer, or photoconductor) or the toner collecting container when returning the printer for servicing, unless specifically requested by SHARP.

SPECIFICATIONS

| | |
|------------------------|--|
| Printer | Desktop type |
| Print process | Diode laser, dry electro-photographic method |
| Page orientation | Portrait (upright) or landscape (horizontal) |
| Print speed | 6 pages per minute maximum 9 pages per minute maximum (JX-9500H) |
| Paper size | A4, B5, letter, legal, invoice, executive |
| Envelope size | International DL, International C5, Commercial 10 (Business), Monarch |
| Print area | 2400 dots × 4080 lines maximum |
| Dot resolution | 300 dots per inch |
| Paper feed | Automatic cassette or manual feed |
| Cassettes | A4, B5, letter, legal, invoice, executive (including options) |
| Cassette capacity | 250 sheets |
| Manual feed | Automatic bypass for transparency films, labels (130 g/m ² maximum paper weight) |
| Delivery tray | Face down tray Face up tray |
| Photoconductor | OPC (organic photoconductive drum) |
| Developing system | Dry, two-component, magnetic brush type |
| Fusing system | Heat roller type |
| Print color | Black |
| Replacement toner | Sealed cartridge |
| Warm-up time | 60 seconds maximum at 25°C |
| Interface | Centronics parallel RS-232C serial |
| Emulation | HP LaserJet Series II, Epson FX-80, IBM Proprinter, IBM Graphics Printer, Diablo 630/630 ECS |
| Resident font | Courier (portrait and landscape); condensed, elite, enlarge, bold, script, italic for dot printer emulation. Courier, courier bold and line printer (portrait and landscape) for HP LaserJet Series II emulation. |
| Optional font | Two-slot plug-in credit card sized cards for HP LaserJet Series II and Diablo 630/630 ECS |
| Power source | Rated local AC voltage ±10% |
| Power consumption | 650 W during warm up |
| Dimensions | 340(W) × 360(D) × 267(H) mm 13-25/64" (W) × 14-3/16" (D) × 10-33/64" (H) |
| Weight | 15 kg (33.1 lbs.) approximately |
| Noise level | 50 dB maximum (printing), 45 dB maximum (idle) |
| Operational conditions | Temperature: 10°C ~ 30°C (50°F ~ 86°F) Humidity: 20% ~ 80% |

As a part of policy of continuous improvement, SHARP reserves the right to make design and specification changes for product improvement without prior notice. The performance specification figures indicated are nominal values of production units. There may be some deviations from these values in individual units.

OPTIONS AND SUPPLIES

Options

| | |
|-----------|--|
| JX-95SU | Second cassette unit (250 sheets) (not including cassette) |
| JX-95EF | Envelope feeder (40 sheets max.) |
| JX-95CC | Legal cassette (250 sheets) |
| JX-95BC | Letter cassette (250 sheets) |
| JX-95AC | Invoice cassette (250 sheets) |
| JX-95A4 | A4 cassette (250 sheets) |
| JX-95B5 | B5 cassette (250 sheets) |
| JX-95GC | Executive cassette (250 sheets) |
| JX-95MB | Expansion memory (1.0 MB) |
| (JX-97MB) | |
| JX-95MC | Expansion memory (1.5 MB) |
| (JX-97MC) | |
| JX-95ME | Expansion memory (2.5 MB) |
| (JX-97ME) | |
| JX-95MH | Expansion memory (4.0 MB) |
| (JX-97MH) | |
| JX-9C4A | Font card |
| (JX-9C5A) | HEWLETT PACKARD/LASERJET (B); (US ASCII symbol set) HELV Bold Prop Port. 14.4 TMS RMN Med Prop Port. 10 TMS RMN Bold Prop Port. 10 TMS RMN Med (It) Prop Port. 10 TMS RMN Light Prop Port. 8 (ROMAN 8 symbol set) Line Printer Light Land. 8.5 |
| JX-9C4F | Font card |
| (JX-9C5F) | HEWLETT PACKARD/LASERJET (F); (ROMAN 8 US ASCII, ROMAN EXT) HELV Bold Prop Port. 14.4 TMS RMN Med Prop Port. 10 TMS RMN Bold Prop Port. 10 TMS RMN Med (It) Prop Port. 10 TMS RMN Med Prop Port. 8 Line Printer Med Port. 8.5 |
| JX-9C4M | Font card |
| (JX-9C5M) | HEWLETT PACKARD/LASERJET (M); (ROMAN 8) PRESTIGE ELITE Med P&L 10 PRESTIGE ELITE Bold P&L 10 PRESTIGE ELITE Med (It) P&L 10 |

| | |
|----------------------|---|
| JX-9C4L (JX-9C5L) | Font card HEWLETT PACKARD/LASERJET (L); (ROMAN 8 SYMBOL SET) COURIER Bold P&L 12 COURIER Med (It) P&L 12 Line Printer Med P&L 8.5 |
| JX-9C4N (JX-9C5N) | Font card HEWLETT PACKARD/LASERJET (N); (ROMAN 8 SYMBOL SET) LETTER GOTHIC Med P&L 12 LETTER GOTHIC Bold P&L 12 LETTER GOTHIC Med (It) P&L 12 |
| JX-9C4P (JX-9C5P) | Font card HEWLETT PACKARD/LASERJET (P); (ROMAN 8 SYMBOL SET) TMS RMN Med Prop P&L 10 TMS RMN Bold Prop P&L 10 TMS RMN Med (It) Prop P&L 10 |
| JX-9C5J | Font card HEWLETT PACKARD/LASERJET (J); (ROMAN 8, US ASCII, ROMAN EXT, MATH 8, MATH 8A, MATH 8B, MATH 7, PI FONT, PI FONT A) PRESTIGE ELITE Med Fixed Port. 7 PRESTIGE ELITE Med Fixed Port. 10 PRESTIGE ELITE Bold Fixed Port. 10 PRESTIGE ELITE (It) Fixed Port. 10 |
| JX-9C5UV | Font card HEWLETT PACKARD/LASERJET (UV); (ROMAN 8, ROMAN EXT, LINE DRAW) HELV Med Prop P&L 6 HELV Med Prop P&L 8 HELV Bold Prop P&L 10 HELV Bold Prop P&L 12 HELV Bold Prop P&L 14 LETTER GOTHIC Med Fixed P&L 9.5 LINE DRAW Med Fixed P&L 12 |
| JX-9C5Z | Font card HEWLETT PACKARD/LASERJET (Z); (ROMAN 8, US ASCII, ECMA 94 (Latin 1)) HELV Med Prop Port. 8 HELV Med Prop Port. 10 HELV Bold Prop Port. 10 HELV (It) Prop Port. 10 HELV Med Prop Port. 12 HELV Bold Prop Port. 12 HELV (It) Prop Port. 12 HELV Bold Prop Port. 14 TMS RMN Med Prop Port. 8 TMS RMN Med Prop Port. 10 |

| | |
|-----------|---|
| | TMS RMN Bold Prop Port. 10 |
| | TMS RMN (It) Prop Port. 10 |
| | TMS RMN Med Prop Port. 12 |
| | TMS RMN Bold Prop Port. 12 |
| | TMS RMN (It) Prop Port. 12 |
| | TMS RMN Bold Prop Port. 14 |
| | LINE PRINTER Med Fixed P&L 8.5 |
| JX-9C1A | Font card |
| (JX-9C1B) | DIABLO 630; Prestige Elite 12, Letter Gothic 12, Bold Proportional, Pica 10 |
| JX-9C3A | Font card |
| (JX-9C3B) | DIABLO 630 ECS; Teletex-Pica 10, Scientific-Pica 10 |

Supplies

| | |
|--|---|
| JX-95DR | Photoconductor cartridge, ozone filter |
| JX-95DC (other than Canada)/JX-95ND (Canada) | Developer cartridge |
| JX-95TC (other than Canada)/JX-95NT (Canada) | Toner kit (toner cartridge, toner collecting container, roller cleaner) |

APPENDIX

INTERFACE HARDWARE

The Laser Printer is equipped with two interfaces:

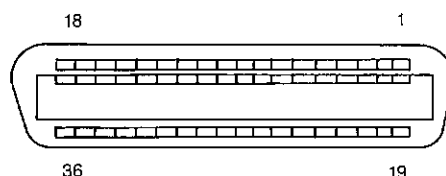
- 1) Centronics parallel
- 2) RS-232C serial

This section provides information on the type of connector, pin configuration, pin signals and signal timing charts.

CENTRONICS PARALLEL

Connector

Female 36-pin DDK 57LE-40360-730B (D29) or equivalent.



Pin Configuration

The pin numbers and signal names are given in the table below.

| PIN# | SIGNAL NAME | PIN# | SIGNAL NAME | PIN# | SIGNAL NAME |
|------|----------------|------|------------------------|------|-------------|
| 1 | STB | 13 | SLCT | 25 | DATA 6 RET |
| 2 | DATA 1 | 14 | AUTO LF | 26 | DATA 7 RET |
| 3 | DATA 2 | 15 | (NC) | 27 | DATA 8 RET |
| 4 | DATA 3 | 16 | GND (0V) | 28 | ACKNLG RET |
| 5 | DATA 4 | 17 | FG (Protective Ground) | 29 | BUSY RET |
| 6 | DATA 5 | 18 | (NC) | 30 | PE RET |
| 7 | DATA 6 | 19 | STB RET | 31 | INPRM |
| 8 | DATA 7 | 20 | DATA 1 RET | 32 | FAULT |
| 9 | DATA 8 | 21 | DATA 2 RET | 33 | GND |
| 10 | ACKNLG | 22 | DATA 3 RET | 34 | (NC) |
| 11 | BUSY | 23 | DATA 4 RET | 35 | +5V |
| 12 | PE (Paper End) | 24 | DATA 5 RET | 36 | SLCT IN |

Signal Descriptions

- Pin 1** ($\overline{\text{STB}}$, printer input):
Low when data to be sent to the printer is valid.
- Pins 2-9** (DATA 1 to DATA 8, printer input):
High pulse for logic 1 data.
- Pin 10** ($\overline{\text{ACKNLG}}$, printer output):
Low pulse acknowledges data received and processed, computer can send next data.
- Pin 11** (BUSY, printer output):
High signal when printer is busy and cannot receive data, low signal when printer is ready to receive data.
- Pin 12** (PE, printer output):
High signal indicates paper out.
- Pin 13** (SLCT, printer output):
High signal indicates printer is ready and on-line.
- Pin 14** ($\overline{\text{AUTO LF}}$, printer input):
Used only for FX-80 emulation. When low and FIX AUTO LF is on, the printer executes a line feed after each carriage return code received.
- Pin 31** ($\overline{\text{INPRM}}$, printer input):
Low signal that initializes the printer to the power-on state. Ignored in the HP LaserJet series II emulation.
- Pin 32** ($\overline{\text{FAULT}}$, printer output):
Low signal indicates printer error.
- Pin 35** (+5 V, printer output):
Printer power on signal, pulled up by a resistor to +5 V.
- Pin 36** ($\overline{\text{SLCT IN}}$, printer input):
Used only for FX-80 emulation. When high, fixed select is off, and DC1 and DC3 are available to select and deselect the printer. When low, fixed select is on, and the printer is selected; DC1 and DC3 are ignored. (See page 51.)

MS-DOS/PC-DOS Command

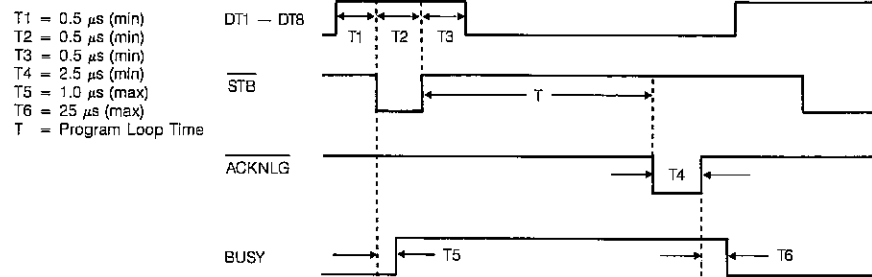
The MS-DOS or PC-DOS command that sets up your computer for communication through its parallel interface is:

MODE LPT1:.,,P

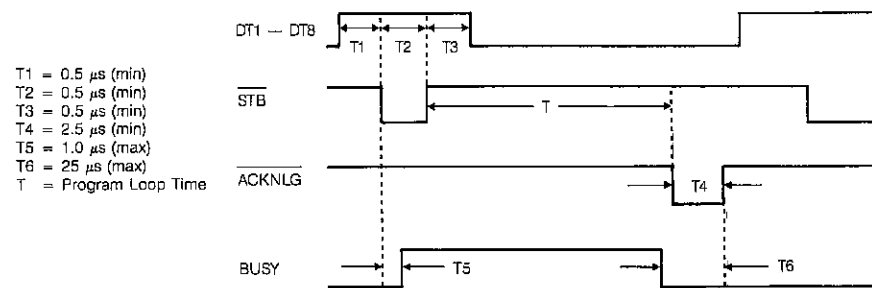
If the LPT port connected to your printer is not LPT1, you need to use the correct LPT port number in the above MODE statements.

Signal Timing Chart

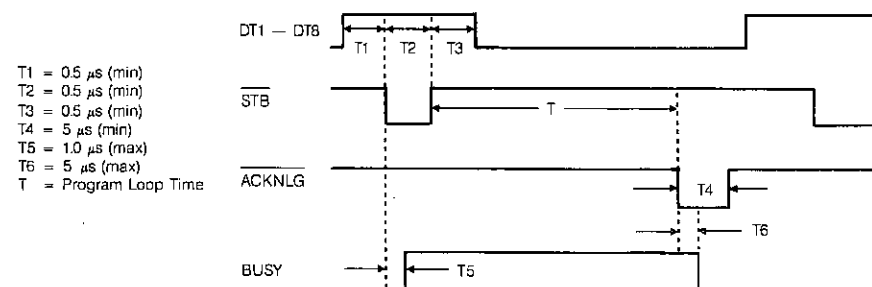
TIMING 1 (DATA TRANSFER STANDARD TIMING)
(CENTRONICS MODEL 703)



TIMING 2 (DATA TRANSFER ALTERNATE TIMING)



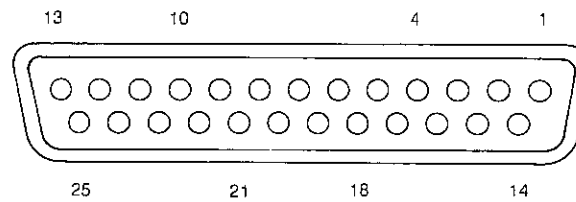
TIMING 3 (DATA TRANSFER ALTERNATE TIMING)



RS-232C SERIAL

Connector

Female 25-pin DDK 17LE-13250-28 (D4CK) or equivalent.



Pin Configuration

The pin numbers and signal names are given in the table below.

| PIN | SIGNAL NAME | SOURCE |
|-----|---------------------------|---------|
| 1 | FG (Frame Ground) | ... |
| 2 | TXD (Transmitted Data) | PRINTER |
| 3 | RXD (Received Data) | HOST |
| 4 | RTS (Request to Send) | PRINTER |
| 6 | DSR (Data Set Ready) | HOST |
| 7 | GND (Signal Ground) | ... |
| 20 | DTR (Data Terminal Ready) | PRINTER |

Signal Descriptions

Pin 2 (TXD, printer output):

Data from the printer to computer.

Pin 3 (RXD, printer input):

Data from the computer to printer.

Pin 4 (RTS, printer output):

High signal sent to the computer before the printer transmits.

This signal is high when the printer power is on.

Pin 6 (DSR, printer input):

High signal indicates the computer is ready.

This signal is not required to receive data.

Pin 20 (DTR, printer output):

High signal indicates the printer is ready and low signal indicates the printer is busy.

Data Format

Start bit 1
Data bits 8*
Stop bit 1
Parity None*

*The status of these items can be changed.

MS-DOS/PC-DOS MODE Commands

The first of the MS-DOS and PC-DOS MODE commands listed below sets up your computer's serial interface to match the printer's default serial configuration choices. The second MODE command sets up your computer for communication through its serial interface.

MODE COM1:9600,N,8,1,P

MODE LPT1:=COM1

If the COM port connected to your printer is not COM1, you need to use the correct COM port number in the above MODE statements.

The Resident Fonts built into your Laser Printer are different in each of the emulations. See the list and samples below and the character set printouts in the programming section.

● Courier 12 point 10 cpi ROMAN-8 PORT/LAND

● Courier 12 point 10 cpi IBM-US PORT/LAND

● Courier 12 point 10 cpi IBM-D/N PORT/LAND

● Courier 12 point 10 cpi ECMA-94 PORT/LAND

● Courier 12 point 10 cpi BOLD ROMAN-8 PORT/LAND

```
! "# $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?  
@ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~ *  
A A E E E I I ~ ~ ~ ~ ~ Ü Ü £ ¤ ¥ ¨ Ç Ñ ñ ¡ ¢ £ ¤ ¥ ¸ º  
ä ê ö å æ ö ü ä è ö ü ä è ö ü Ä Ö Ü É Î Æ Å Å Æ Ð Æ Í Ó Ô Õ Ö Š š Ů ŷ Þ þ µ ¶ · ¸ ¹ º » « ■ ±
```

- Courier 12 point 10 cpi BOLD IBM-US PORT/LAND

! "#\$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéäääâçèëèìíîËÄÊæøðòûüÿÖÜçƒ¥¥ŕáíóúñÑªº¿—½¼;«»|÷≈²·√η²

- Courier 12 point 10 cpi BOLD IBM-D/N PORT/LAND

! "#\$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéäääâçèëèìíîËÄÊæøðòûüÿÖÜçƒ¥¥ŕáíóúñÑªº¿—½¼;«»|÷≈²·√η²

- Courier 12 point 10 cpi BOLD ECMA-94 PORT/LAND

! "#\$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖ×ØÙÚÛÜÝÞßàáâãäåæçèéêëìíîïðñòóôõö÷øùúûüýþ

- Line Printer 8.5 point 16.66 cpi ROMAN-8 PORT/LAND

! "#\$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖ×ØÙÚÛÜÝÞßàáâãäåæçèéêëìíîïðñòóôõö÷øùúûüýþ

APPENDIX

- Line Printer 8.5 point 16.66 cpi IBM-US PORT/LAND

! "#\$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéäääâçèëèìíîËÄÊæøðòûüÿÖÜçƒ¥¥ŕáíóúñÑªº¿—½¼;«»|÷≈²·√η²

- Line Printer 8.5 point 16.66 cpi IBM-D/N PORT/LAND

! "#\$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéäääâçèëèìíîËÄÊæøðòûüÿÖÜçƒ¥¥ŕáíóúñÑªº¿—½¼;«»|÷≈²·√η²

- Line Printer 8.5 point 16.66 cpi ECMA-94 PORT/LAND

! "#\$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖ×ØÙÚÛÜÝÞßàáâãäåæçèéêëìíîïðñòóôõö÷øùúûüýþ

Epson FX-80

- Courier 12 point 10 cpi USASCII+ITALIC PORT/LAND

```
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}  
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

- Courier Script 6 point 10 cpi USASCII+ITALIC PORT/LAND

```
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}  
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

- Elite 12 point 12 cpi USASCII+ITALIC PORT/LAND

```
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}  
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

- Elite Script 6 point 12 cpi USASCII+ITALIC PORT/LAND

```
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}  
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

- Condense 12 point 17.6 cpi USASCII+ITALIC PORT/LAND

```
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}  
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

- Condense Script 6 point 17.6 cpi USASCII+ITALIC PORT/LAND

```
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}  
!"#$%&'()*+,-./0123456789:;<=>?  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

APPENDIX

- [illegible]

- [illegible]

- [illegible]

- [illegible]

- [illegible]

- [illegible]

APPENDIX

- ♥♣♦ § !"#\$%&'()*+,-./0123456789;<=>?
@ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéåäääçëèëïîíÀÆæǾöðũÿÖÜčřŗŘáíoúñÑªº¿—¼¾¡«»░▒▓▔|||}|_|⌋⌎

|_ ⊥ ⊦ αβΓΔΣμΤΦΘΩδϵφρ≡±≥≤ ∂≈∞ ··⁄n²

- [illegible]

-

- [illegible]

● Courier 12 point 10 cpi USASCII PORT/LAND

```
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\ ]^`_abcdefghijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./0123456789:;<=>?
```

● Courier 12 point 10 cpi USASCII+SPECIAL CHR. PORT

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PROGRAMMING

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EMULATION INFORMATION

Character Table

HP LaserJet series II

Courier 12 point 10cpi ROMAN-8

| | | UPPER 4 BIT | | | | | | | | | | | | | | | |
|-------------|----------|-------------|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOWER 4 BIT | HI LO | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| | 0 | | | | 0 | @ | P | ` | p | | | | — | â | À | Á | Ð |
| | 1 | | | ! | 1 | A | Q | a | q | | | À | Ý | ê | î | Ã | þ |
| | 2 | | | " | 2 | B | R | b | r | | | Â | ý | ô | ø | ä | · |
| | 3 | | | # | 3 | C | S | c | s | | | Ê | ° | û | Æ | Ð | μ |
| | 4 | | | \$ | 4 | D | T | d | t | | | Ê | Ç | ä | å | ð | ¶ |
| | 5 | | | % | 5 | E | U | e | u | | | Ê | Ç | é | í | í | ¾ |
| | 6 | | | & | 6 | F | V | f | v | | | î | Ñ | ó | ø | ì | — |
| | 7 | | | ' | 7 | G | W | g | w | | | Ï | ñ | ú | æ | ó | ¼ |
| | 8 | | | (| 8 | H | X | h | x | | | · | í | à | Ä | ò | ½ |
| | 9 | | |) | 9 | I | Y | i | y | | | · | ¿ | è | ì | õ | ¾ |
| | A | | | * | : | J | Z | j | z | | | ^ | ¤ | ò | Ö | õ | ¾ |
| | B | | | + | ; | K | [| k | { | | | ™ | f | ù | Û | š | « |
| | C | | | , | < | L | \ | l | | | | ~ | ¥ | ä | É | š | ■ |
| | D | | | - | = | M |] | m | } | | | Ù | š | ë | Ï | Ú | » |
| | E | | | . | > | N | ^ | n | ~ | | | Ù | f | ö | ß | ÿ | ± |
| | F | | | / | ? | O | _ | o | ¸ | | | £ | ç | ü | ô | ÿ | |

ISO Symbol Sets

ISO Symbol Sets

| | | | DECIMAL CHARACTER EQUIVALENTS | | | | | | | | | | | |
|-----|--------------------|----|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|
| ISO | NAME | ID | 23 | 24 | 40 | 5B | 5C | 5D | 5E | 60 | 7B | 7C | 7D | 7E |
| 6 | ASCII | 0U | # | \$ | @ | [| \ |] | ^ | ` | { | | } | ~ |
| 2 | ISO IRV | 2U | # | ¤ | @ | [| \ |] | ^ | ˘ | { | | } | — |
| 4 | ISO United Kingdom | 1E | f | \$ | @ | [| \ |] | ^ | ˘ | { | | } | — |
| 25 | ISO French | 0F | f | \$ | à | ° | ç | § | ^ | ˘ | é | ù | è | ¨ |
| 69 | ISO French | 1F | f | \$ | à | ° | ç | § | ^ | μ | é | ù | è | ¨ |
| | German | 0G | f | \$ | § | Ä | Ö | Ü | ^ | ˘ | ä | ö | ü | ß |
| 21 | ISO German | 1G | # | \$ | § | Ä | Ö | Ü | ^ | ˘ | ä | ö | ü | ß |
| 15 | ISO Italian | 0I | ± | \$ | § | ^ | ç | é | ^ | ù | à | ò | è | ì |
| 14 | JIS ASCII | 0K | # | \$ | @ | [| ¥ |] | ^ | ˘ | { | | } | — |
| 52 | ISO Chinese | 2K | # | ¥ | @ | [| \ |] | ^ | ˘ | { | | } | — |
| 10 | ISO Swedish | 3S | # | ¤ | @ | Ä | Ö | Å | ^ | ˘ | ä | ö | å | — |
| 11 | ISO Swedish | 0S | # | ¤ | É | Ä | Ö | Å | Ü | é | ä | ö | å | ü |
| | Spanish | 1S | # | \$ | @ | ¡ | Ñ | ¿ | ^ | ˘ | { | ñ | } | ~ |
| 17 | ISO Spanish | 2S | f | \$ | § | ¡ | Ñ | ¿ | ^ | ˘ | ñ | ç | | ~ |
| 85 | ISO Spanish | 6S | # | \$ | · | ¡ | Ñ | Ç | ¿ | ˘ | ñ | ç | | ¨ |
| 16 | ISO Portuguese | 4S | # | \$ | § | Ã | Ç | Õ | ^ | ˘ | ã | ç | õ | ° |
| 84 | ISO Portuguese | 5S | # | \$ | ˘ | Ã | Ç | Õ | ^ | ˘ | ã | ç | õ | ˘ |
| 60 | ISO Norwegian v1 | 0D | # | \$ | @ | Æ | Ø | Å | ^ | ˘ | æ | ø | å | — |
| 61 | ISO Norwegian v2 | 1D | § | \$ | @ | Æ | Ø | Å | ^ | ˘ | æ | ø | å | |

HP LaserJet series II

Courier 12 point 10 cpi IBM-US

UPPER 4 BIT

| LOWER 4 BIT | HI LO | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|-------------|----------|----|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | | ► | | 0 | @ | P | ` | p | Ç | É | á | ☒ | ⒌ | ⒎ | α | ≡ |
| 1 | ☉ | ◄ | ! | 1 | A | Q | a | q | ü | æ | í | ☒ | ⒌ | ⒎ | β | ± | |
| 2 | ● | ‡ | " | 2 | B | R | b | r | é | Æ | ó | ☒ | ⒌ | ⒎ | Γ | ≥ | |
| 3 | ♥ | !! | # | 3 | C | S | c | s | â | ô | ú | | ⒌ | ⒎ | π | ≤ | |
| 4 | ♦ | ¶ | \$ | 4 | D | T | d | t | ä | ö | ñ | ⒌ | ⒎ | ⒌ | Σ | ∫ | |
| 5 | + | § | % | 5 | E | U | e | u | à | ò | Ñ | ⒌ | ⒎ | ⒌ | σ | ∫ | |
| 6 | ♣ | - | & | 6 | F | V | f | v | å | û | ª | ⒌ | ⒎ | ⒌ | μ | ÷ | |
| 7 | • | ± | ' | 7 | G | W | g | w | ç | ù | º | ⒌ | ⒎ | ⒌ | τ | ≈ | |
| 8 | ■ | † | (| 8 | H | X | h | x | ê | ÿ | ¿ | ⒌ | ⒎ | ⒌ | ⊕ | ° | |
| 9 | ○ | ↓ |) | 9 | I | Y | i | y | ë | ö | ¬ | ⒌ | ⒎ | ⒌ | ⊕ | • | |
| A | ☉ | → | * | : | J | Z | j | z | è | Û | ¬ | ⒌ | ⒎ | ⒌ | Ω | • | |
| B | σ | † | + | ; | K | [| k | { | ï | ç | ½ | ⒌ | ⒎ | ⒌ | δ | ✓ | |
| C | ♀ | ¬ | , | < | L | \ | l | | î | £ | ¼ | ⒌ | ⒎ | ⒌ | ∞ | η | |
| D | ♪ | † | - | = | M |] | m | } | ï | ¥ | ; | ⒌ | ⒎ | ⒌ | φ | ² | |
| E | ♪ | ▲ | . | > | N | ^ | n | ~ | Ä | ℞ | « | ⒌ | ⒎ | ⒌ | ε | ▪ | |
| F | * | ▼ | / | ? | O | _ | o | ※ | Å | f | » | ⒌ | ⒎ | ⒌ | ∩ | | |

HP LaserJet series II

Courier 12 point 10cpi IBM-D/N

UPPER 4 BIT

| LOWER 4 BIT | HI LO | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|-------------|----------|----|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | | ► | | 0 | @ | P | ` | p | Ç | É | á | ☐ | L | ⌞ | α | ≡ |
| 1 | ⊙ | ◄ | ! | 1 | A | Q | a | q | ü | æ | í | ☐ | ⌞ | ⌞ | β | ± | |
| 2 | ● | ‡ | " | 2 | B | R | b | r | é | Æ | ó | ☐ | ⌞ | ⌞ | Γ | ≥ | |
| 3 | ♥ | !! | # | 3 | C | S | c | s | â | ô | ú | | | ⌞ | π | ≤ | |
| 4 | ♦ | ¶ | \$ | 4 | D | T | d | t | ä | ö | ñ | | — | ⌞ | Σ | | |
| 5 | ♣ | § | % | 5 | E | U | e | u | à | ò | Ñ | | + | ⌞ | σ | ↓ | |
| 6 | ♠ | — | & | 6 | F | V | f | v | â | û | õ | | | ⌞ | μ | ÷ | |
| 7 | • | ‡ | ' | 7 | G | W | g | w | ç | ù | õ | ⌞ | | ⌞ | τ | ≈ | |
| 8 | ■ | ↑ | (| 8 | H | X | h | x | ê | ÿ | ¿ | ⌞ | ⌞ | ⌞ | ⊗ | ° | |
| 9 | ○ | ↓ |) | 9 | I | Y | i | y | ë | ö | ã | | ⌞ | ⌞ | ⊗ | • | |
| A | ☐ | → | * | : | J | Z | j | z | è | ü | Ä | | ⌞ | ⌞ | ⌞ | Ω | • |
| B | ♂ | ← | + | ; | K | [| k | { | ÿ | ø | ℓ | ⌞ | ⌞ | ⌞ | ⌞ | δ | ✓ |
| C | ♀ | ⌞ | , | < | L | \ | l | | î | £ | ñ | ⌞ | | ⌞ | ⌞ | ∞ | η |
| D | ♪ | ↔ | — | = | M |] | m | } | ï | ø | ¡ | ⌞ | — | ⌞ | ⌞ | φ | ² |
| E | ♫ | ▲ | . | > | N | ^ | n | ~ | Ä | ℓ | ³ | ⌞ | ⌞ | ⌞ | ⌞ | ε | • |
| F | ✱ | ▼ | / | ? | O | _ | o | ✱ | Ä | ℓ | ⁴ | ⌞ | ⌞ | ⌞ | ⌞ | ∩ | |

HP LaserJet series II

Courier 12 point 10 cpi ECMA-94

| | | UPPER 4 BIT | | | | | | | | | | | | | | | |
|-------------|----------|-------------|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOWER 4 BIT | HI LO | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| | 0 | | | | 0 | @ | P | ` | p | | | | ° | À | Ð | à | ð |
| | 1 | | | ! | 1 | A | Q | a | q | | | ı | ± | Á | Ñ | á | ñ |
| | 2 | | | " | 2 | B | R | b | r | | | ç | ² | Â | Ò | â | ò |
| | 3 | | | # | 3 | C | S | c | s | | | £ | ³ | Ã | Ó | ã | ó |
| | 4 | | | \$ | 4 | D | T | d | t | | | ¤ | ´ | Ä | Ô | ä | ô |
| | 5 | | | % | 5 | E | U | e | u | | | ¥ | µ | Å | Õ | å | õ |
| | 6 | | | & | 6 | F | V | f | v | | | | ¶ | Æ | Ö | æ | ö |
| | 7 | | | ' | 7 | G | W | g | w | | | § | · | Ç | × | ç | ÷ |
| | 8 | | | (| 8 | H | X | h | x | | | " | ¸ | È | Ø | è | ø |
| | 9 | | |) | 9 | I | Y | i | y | | | • | ¹ | É | Ù | é | ù |
| | A | | | * | : | J | Z | j | z | | | ª | º | Ê | Ú | ê | ú |
| | B | | | + | ; | K | { | k | { | | | « | » | Ë | Û | ë | û |
| | C | | | , | < | L | \ | l | | | | ¬ | ¼ | Ì | Ü | ì | ü |
| | D | | | - | = | M | } | m | } | | | - | ½ | Í | Ý | í | ý |
| | E | | | . | > | N | ^ | n | ~ | | | ® | ¾ | Î | Þ | î | þ |
| | F | | | / | ? | O | _ | o | ¸ | | | ¯ | ¿ | Ï | ß | ï | ÿ |

Epson FX-80

Courier 12 point 10 cpi USASCII+ITALIC

| | | UPPER 4 BIT | | | | | | | | | | | | | | | |
|-------------|----------|-------------|---|----|---|---|---|---|---|---|---|----|---|---|---|---|---|
| LOWER 4 BIT | HI LO | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| | 0 | à | § | | 0 | @ | P | ` | p | à | § | | 0 | @ | P | ` | p |
| LOWER 4 BIT | 1 | è | ß | ! | 1 | A | Q | a | q | è | ß | ! | 1 | A | Q | a | q |
| | 2 | ù | Æ | " | 2 | B | R | b | r | ù | Æ | " | 2 | B | R | b | r |
| | 3 | ò | æ | # | 3 | C | S | c | s | ò | æ | # | 3 | C | S | c | s |
| | 4 | ì | ø | \$ | 4 | D | T | d | t | ì | ø | \$ | 4 | D | T | d | t |
| | 5 | ° | ø | % | 5 | E | U | e | u | ° | ø | % | 5 | E | U | e | u |
| | 6 | f | ¨ | & | 6 | F | V | f | v | f | ¨ | & | 6 | F | V | f | v |
| | 7 | í | Ä | ' | 7 | G | W | g | w | í | Ä | ' | 7 | G | W | g | w |
| | 8 | ¿ | Ö | (| 8 | H | X | h | x | ¿ | Ö | (| 8 | H | X | h | x |
| | 9 | Ñ | Ü |) | 9 | I | Y | i | y | Ñ | Ü |) | 9 | I | Y | i | y |
| | A | ñ | ä | * | : | J | Z | j | z | ñ | ä | * | : | J | Z | j | z |
| | B | ¤ | ö | + | ; | K | [| k | { | ¤ | ö | + | ; | K | [| k | { |
| | C | Ŕ | ü | , | < | L | \ | l | | Ŕ | ü | , | < | L | \ | l | |
| | D | À | É | - | = | M |] | m | } | À | É | - | = | M |] | m | } |
| | E | â | é | . | > | N | ^ | n | ~ | â | é | . | > | N | ^ | n | ~ |
| | F | ç | ¥ | / | ? | O | _ | o | | ç | ¥ | / | ? | O | _ | o | |

☐ National Character

| | A3 23 | A4 24 | C0 40 | DB 5B | DC 5C | DD 5D | DE 5E | E0 60 | FB 7B | FC 7C | FD 7D | FE 7E |
|-----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| USA | # | \$ | @ | [| \ |] | ^ | ` | { | | } | ~ |
| FRANCE | # | \$ | à | ° | ç | § | ^ | ` | é | ù | è | ¨ |
| GERMANY | # | \$ | § | Ä | Ö | Ü | ^ | ` | ä | ö | ü | ß |
| ENGLAND | £ | \$ | @ | [| \ |] | ^ | ` | { | | } | ~ |
| DENMARK 1 | # | \$ | @ | Æ | Ø | Å | ^ | ` | æ | ø | å | ~ |
| SWEDEN | # | ¤ | É | Ä | Ö | Å | Ü | é | ä | ö | å | ü |
| ITALY | # | \$ | @ | ° | \ | é | ^ | ù | à | ò | è | ì |
| SPAIN | £ | \$ | @ | ¡ | Ñ | ¿ | ^ | ` | ¨ | ñ | } | ~ |
| JAPAN | # | \$ | @ | [| ¥ |] | ^ | ` | { | | } | ~ |
| NORWAY | # | ¤ | É | Æ | Ø | Å | Ü | é | æ | ø | å | ü |
| DENMARK 2 | # | \$ | É | Æ | Ø | Å | Ü | é | æ | ø | å | ü |

National Character Table

IBM Proprinter

Courier 12 point 10 cpi USASCII+IBM CHR.

UPPER 4 BIT

| LOWER 4 BIT | HI\LO | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|-------------|-------|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | 0 | @ | P | ` | p | Ç | É | á | ☐ | L | ⊥ | α | ≡ |
| | 1 | | | ! | 1 | A | Q | a | q | ü | æ | í | ☐ | ⊥ | ⌞ | β | ± |
| | 2 | | | " | 2 | B | R | b | r | é | Æ | ó | ☐ | ⌞ | ⌞ | Γ | ≥ |
| | 3 | ♥ | | # | 3 | C | S | c | s | â | ô | ú | | ⌞ | ⌞ | π | ≤ |
| | 4 | ♦ | ¶ | \$ | 4 | D | T | d | t | ä | ö | ñ | ⌞ | ⌞ | ⌞ | Σ | ∫ |
| | 5 | ♣ | § | % | 5 | E | U | e | u | à | ò | Ñ | ⌞ | ⌞ | ⌞ | σ | ∫ |
| | 6 | ♠ | | & | 6 | F | V | f | v | å | û | ☐ | ⌞ | ⌞ | ⌞ | μ | ÷ |
| | 7 | | | ' | 7 | G | W | g | w | ç | ù | ☐ | ⌞ | ⌞ | ⌞ | τ | ≈ |
| | 8 | | | (| 8 | H | X | h | x | ê | ÿ | ¿ | ⌞ | ⌞ | ⌞ | ø | ° |
| | 9 | | |) | 9 | I | Y | i | y | ë | Ö | ☐ | ⌞ | ⌞ | ⌞ | Θ | • |
| | A | | → | * | : | J | Z | j | z | è | Ù | ☐ | ⌞ | ⌞ | ⌞ | Ω | • |
| | B | | ← | + | ; | K | [| k | { | í | Ç | ½ | ⌞ | ⌞ | ⌞ | δ | √ |
| | C | | | , | < | L | \ | l | | î | £ | ¼ | ⌞ | ⌞ | ⌞ | ∞ | ∞ |
| | D | | | - | = | M |] | m | } | ï | ¥ | ⅓ | ⌞ | ⌞ | ⌞ | φ | ² |
| | E | | | . | > | N | ^ | n | ~ | Ä | ℞ | « | ⌞ | ⌞ | ⌞ | ε | ▪ |
| | F | | ø | / | ? | O | _ | o | | Å | f | » | ⌞ | ⌞ | ⌞ | ∩ | |
| | | | | | | | | | | | | | | | | | |

☐ National Character

| | 30 | 9B | 9D | 9E | 9F | A6 | A7 | A9 | AA | AB | AC | AE | AF |
|----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| International | 0 | Ç | ¥ | ℞ | f | ⌞ | ⌞ | ⌞ | ⌞ | ½ | ¼ | « | » |
| Norway/Denmark | 0 | ø | Ø | L | l | Ö | Ö | ä | Ä | ℓ | ñ | ³ | ¤ |

National Character Table

IBM Graphics Printer

Courier 12 point 10 cpi USASCII+IBM CHR.

| | | UPPER 4 BIT | | | | | | | | | | | | | | | |
|-------------|----------|-------------|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOWER 4 BIT | HI LO | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| | 0 | | | | 0 | @ | P | ` | p | Ç | É | á | ■ | L | ⊥ | α | ≡ |
| | 1 | | | ! | 1 | A | Q | a | q | ü | æ | í | ■ | ⊥ | ⊥ | β | ± |
| | 2 | | | " | 2 | B | R | b | r | é | Æ | ó | ■ | ⊥ | ⊥ | Γ | ≥ |
| | 3 | ♥ | | # | 3 | C | S | c | s | â | ô | ú | | ⊥ | ⊥ | π | ≤ |
| | 4 | ♦ | | \$ | 4 | D | T | d | t | ä | ö | ñ | ⊥ | ⊥ | ⊥ | Σ | ⌈ |
| | 5 | ♣ | § | % | 5 | E | U | e | u | à | ò | Ñ | ⊥ | ⊥ | ⊥ | σ | ⌋ |
| | 6 | ♠ | | & | 6 | F | V | f | v | å | û | ■ | ⊥ | ⊥ | ⊥ | μ | ÷ |
| | 7 | | | ' | 7 | G | W | g | w | ç | ù | ■ | ⊥ | ⊥ | ⊥ | τ | ≈ |
| | 8 | | | (| 8 | H | X | h | x | ê | ÿ | ¿ | ⊥ | ⊥ | ⊥ | ⊕ | ° |
| | 9 | | |) | 9 | I | Y | i | y | ë | ö | ⊥ | ⊥ | ⊥ | ⊥ | ⊖ | • |
| | A | | | * | : | J | Z | j | z | è | Û | ⊥ | ⊥ | ⊥ | ⊥ | Ω | • |
| | B | | | + | ; | K | [| k | { | ÿ | ç | ½ | ⊥ | ⊥ | ■ | δ | ✓ |
| | C | | | , | < | L | \ | l | | î | £ | ¼ | ⊥ | ⊥ | ■ | ∞ | " |
| | D | | | - | = | M |] | m | } | ï | ¥ | ; | ⊥ | ⊥ | ■ | φ | ² |
| | E | | | . | > | N | ^ | n | ~ | Ä | Ŕ | « | ⊥ | ⊥ | ⊥ | ε | • |
| | F | | | / | ? | O | _ | o | | Å | f | » | ⊥ | ⊥ | ■ | η | |

■ National Character

| | 30 | 9B | 9D | 9E | 9F | A6 | A7 | A9 | AA | AB | AC | AE | AF |
|----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| International | 0 | Ç | ¥ | Ŕ | f | ■ | ■ | ⊥ | ⊥ | ½ | ¼ | « | » |
| Norway/Denmark | 0 | ø | Ø | L | l | ō | Õ | ā | Ä | ℓ | ñ | ³ | ¤ |

National Character Table


Diablo 630/630 ECS

Courier 12 point 10 cpi USASCII

UPPER 4 BIT

LOWER 4 BIT

| HI LO | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|----------|---|---|---|---|---|---|---|---|
| 0 | | | 0 | 1 | 2 | 3 | 4 | 5 |
| 1 | | | 6 | 7 | 8 | 9 | A | B |
| 2 | | | C | D | E | F | G | H |
| 3 | | | I | J | K | L | M | N |
| 4 | | | O | P | Q | R | S | T |
| 5 | | | U | V | W | X | Y | Z |
| 6 | | | [| \ |] | ^ | _ | ` |
| 7 | | | { | | } | ~ | | |

 National Character

| | 28 | 24 | 40 | 5B | 5C | 5D | 5E | 60 | 7B | 7C | 7D | 7E |
|-----------|----|----|----|----|----|----|----|----|----|----|----|----|
| USA | # | \$ | @ | [| \ |] | ^ | ` | { | | } | ~ |
| FRANCE | # | \$ | à | ° | ç | § | ^ | ` | é | ù | è | ¨ |
| GERMANY | # | \$ | § | Ä | Ö | Ü | ^ | ` | ä | ö | ü | ß |
| ENGLAND | f | \$ | @ | [| \ |] | ^ | ` | { | | } | ~ |
| DENMARK 1 | # | \$ | @ | Æ | Ø | Å | ^ | ` | æ | ø | å | ~ |
| SWEDEN | # | ¤ | é | Ä | Ö | Å | Ü | é | ä | ö | å | ü |
| ITALY | # | \$ | @ | ° | \ | é | ^ | ` | à | ò | è | ì |
| SPAIN | R | \$ | @ | ¡ | Ñ | ¿ | ^ | ` | ¨ | ñ |) | ~ |
| JAPAN | # | \$ | @ | [| ¥ |] | ^ | ` | { | | } | ~ |
| NORWAY | # | ¤ | é | Æ | Ø | Å | Ü | é | æ | ø | å | ü |
| DENMARK 2 | # | \$ | é | Æ | Ø | Å | Ü | é | æ | ø | å | ü |

Hex Dump

Courier 12 point 10 cpi USASCII+SPECIAL CHR.

Page 1

| | |
|---|--|
| 1B 45 1B 26 6C 4C 1B 26 6C 36 36 50 1B 26 6C 4F | EE |
| 1B 28 30 55 1B 28 73 31 70 31 30 76 73 42 1B 26 | E(OUH(slp10vsB& |
| 6C 36 44 1B 26 61 2D 33 36 30 56 0A 0A 0A 0A OD | l6D&a-360V& |
| 1B 26 61 2B 31 32 39 32 48 1B 28 30 55 1B 28 73 | &a+1292H&(OU(s |
| 31 70 31 30 76 73 37 42 53 4F 46 54 2F 50 52 49 | lp10vs7BSOFT/PRI |
| 4E 54 1B 26 61 2B 34 31 48 53 45 52 56 49 43 45 | NT&a+41HSERVICE |
| 1B 26 61 2B 34 31 48 44 45 53 43 52 49 50 54 49 | &a+41HDESCRIPTI |
| 4F 4E 1B 26 6C 4F 1B 28 30 55 1B 28 73 31 70 31 | ON&LO&(OU&(slp1 |
| 30 76 73 42 0A 0A 0A OD 1B 26 61 2B 35 35 30 48 | 0vs&&&&&a+550H |
| 1B 28 30 55 1B 28 73 31 70 31 30 76 73 37 42 1B | E(OUH(slp10vs7B& |
| 26 64 44 46 45 41 54 55 52 45 53 1B 26 6C 4F 1B | &dDFEATURES&&LO& |
| 28 30 55 1B 28 73 31 70 31 30 76 73 42 1B 26 64 | (OUH(slp10vsB&&d |
| 40 0A OD 1B 26 61 2B 35 35 30 48 53 6F 66 74 2F | &&&&&a+550HSoft/ |
| 50 72 69 6E 74 1B 26 61 2B 34 31 48 69 73 1B 26 | Print&a+41His& |
| 61 2B 34 31 48 61 1B 26 61 2B 34 31 48 63 6F 6C | a+41Ha&&a+41Hcol |
| 6C 65 63 74 69 6F 6E 1B 26 61 2B 34 31 48 6F 66 | lection&a+41Hof |
| 1B 26 61 2B 34 31 48 61 6E 6E 75 61 6C 1B 26 61 | &a+41Hannual&a |
| 2B 34 31 48 73 75 62 73 63 72 69 70 74 69 6F 6E | +41Hsubscription |
| 1B 26 61 2B 34 31 48 73 65 72 76 69 63 65 73 2C | &a+41Hservices, |
| 1B 26 61 2B 34 31 48 64 65 73 69 67 6E 65 64 0A | &a+41Hdesigned& |
| 0D 1B 26 61 2B 35 35 30 48 74 6F 1B 26 61 2B 34 | &&a+550Hto&&a+4 |
| 31 48 61 73 73 69 73 74 1B 26 61 2B 34 31 48 70 | lHassist&a+41Hp |
| 72 69 6E 74 65 72 1B 26 61 2B 34 31 48 63 6F 6D | rinter&a+41Hcom |
| 70 61 6E 69 65 73 1B 26 61 2B 34 31 48 69 6E 1B | panies&a+41Hin& |
| 26 61 2B 34 31 48 61 63 68 69 65 76 69 6E 67 1B | &a+41Hachieving& |
| 26 61 2B 34 31 48 61 6E 64 1B 26 61 2B 34 31 48 | &a+41Hand&&a+41H |
| 6D 61 69 6E 74 61 69 6E 69 6E 67 0A OD 1B 26 61 | maintaining&&&&a |
| 2B 35 35 30 48 63 6F 6D 70 61 74 69 62 69 6C 69 | +550Hcompatibili |
| 74 79 1B 26 61 2B 34 30 48 77 69 74 68 1B 26 61 | ty&a+40Hwith&a |
| 2B 34 30 48 74 6F 70 2D 73 65 6C 6C 69 6E 67 1B | +40Htop-selling& |
| 26 61 2B 34 30 48 73 6F 66 74 77 61 72 65 2E 1B | &a+40Hsoftware.& |
| 26 61 2B 34 30 48 1B 26 61 2B 34 30 48 54 68 65 | &a+40H&&a+40Hthe |
| 1B 26 61 2B 34 30 48 73 65 72 76 69 63 65 1B 26 | &&a+40Hservice& |
| 61 2B 34 30 48 69 6E 63 6C 75 64 65 73 1B 26 61 | a+40Hincludes&a |
| 2B 34 30 48 74 65 73 74 0A OD 1B 26 61 2B 35 35 | +40Htest&&&a+55 |
| 30 48 73 6F 66 74 77 61 72 65 1B 26 61 2B 34 31 | 0Hsoftware&a+41 |
| 48 61 6E 64 1B 26 61 2B 34 31 48 6B 65 79 1B 26 | Hand&a+41Hkey& |
| 61 2B 34 31 48 69 6E 66 6F 72 6D 61 74 69 6F 6E | a+41Hinformation |
| 1B 26 61 2B 34 31 48 72 65 6C 61 74 69 6E 67 1B | &a+41Hrelating& |
| 26 61 2B 34 31 48 68 6F 77 1B 26 61 2B 34 31 48 | &a+41Hhow&a+41H |
| 74 68 65 1B 26 61 2B 34 31 48 6C 65 61 64 69 6E | the&a+41Hleadin |
| 67 1B 26 61 2B 34 31 48 49 42 4D 2D 50 43 0A OD | g&a+41HIBM-PC& |
| 1B 26 61 2B 35 35 30 48 63 6F 6D 70 61 74 69 62 | &&a+550Hcompatib |
| 6C 65 1B 26 61 2B 34 31 48 73 6F 66 74 77 61 72 | le&a+41Hsoftwar |
| 65 1B 26 61 2B 34 31 48 70 72 6F 64 75 63 74 73 | e&a+41Hproducts |
| 1B 26 61 2B 34 31 48 73 75 70 70 6F 72 74 1B 26 | &a+41Hsupport& |
| 61 2B 34 31 48 76 61 72 69 6F 75 73 1B 26 61 2B | a+41Hvarious&a+ |
| 34 31 48 70 72 69 6E 74 65 72 73 2E 1B 26 61 2B | 41Hprinters.&&a+ |
| 34 31 48 1B 26 61 2B 34 31 48 54 68 65 1B 26 61 | 41H&a+41Hthe&a |
| 2B 34 31 48 6B 65 79 0A OD 1B 26 61 2B 35 35 30 | +41Hkey&&a+550 |
| 48 65 6C 65 6D 65 6E 74 73 1B 26 61 2B 34 31 48 | Helements&a+41H |
| 6F 66 1B 26 61 2B 34 31 48 74 68 65 1B 26 61 2B | of&a+41Hthe&a+ |
| 34 31 48 53 6F 66 74 2F 50 72 69 6E 74 1B 26 61 | 41HSoft/Print&a |
| 2B 34 31 48 73 65 72 76 69 63 65 73 1B 26 61 2B | +41Hservices&a+ |
| 34 31 48 61 72 65 1B 26 61 2B 34 31 48 73 75 6D | 41Hare&a+41Hsum |
| 6D 61 72 69 7A 65 64 1B 26 61 2B 34 31 48 62 65 | marized&a+41Hbe |
| 6C 6F 77 3A 0A 0A OD 1B 26 61 2B 35 35 30 48 1B | low:&&&&a+550H& |
| 28 30 55 1B 28 73 31 70 31 30 76 73 37 42 1B 26 | (OUH(slp10vs7B& |
| 64 44 43 6F 6D 70 61 74 69 62 69 6C 69 74 79 1B | dCompatibility& |
| 26 61 2B 34 31 48 54 65 73 74 1B 26 61 2B 34 31 | &a+41HTest&a+41 |
| 48 46 69 6C 65 73 1B 26 6C 4F 1B 28 30 55 1B 28 | HFiles&&LO&(OUH(|
| 73 31 70 31 30 76 73 42 1B 26 64 40 0A OD 1B 26 | slp10vsB&&d&&& |
| 61 2B 35 35 30 48 54 68 65 1B 26 61 2B 34 31 48 | a+550HThe&a+41H |

HP LaserJet series II

To allow the programmer to use HP LaserJet series II emulation with their Laser Printer, the following information on emulation commands is required.

Control Codes

Control Codes are commands to tell the printer how to process the data it receives. To determine the appropriate decimal and hexadecimal values for the codes, you should refer to the reference material provided with your computer or software.

The control codes are:

| | |
|-----------|--|
| CODE: | BS (Backspace) |
| FUNCTION: | Moves the print position to the left a distance equal to the width of the last printed symbol or space. If the print position is already at the left margin, no action is taken. |
| CODE: | LF (Line feed) |
| FUNCTION: | Moves the print position to the next print line, maintain the current column position. |
| CODE: | FF (Form feed) |
| FUNCTION: | Moves the print position to the first line of the next page, maintain current column position. |
| CODE: | CR (Carriage return) |
| FUNCTION: | Moves the print position to the left margin of the current line. |
| CODE: | SO (Shift Out) |
| FUNCTION: | Selects the secondary font until SI is received. |
| CODE: | SI (Shift In) |
| FUNCTION: | Selects the primary font until SO is received. |
| CODE: | ESC (Escape) |
| FUNCTION: | Introduces sequence of characters to control the printer's programmable features. |
| CODE: | HT (H TAB) |
| FUNCTION: | Moves the print position to the next tab stop on the current line. The tab stop are at left margin and at every eight columns to the right of the left margin. |
| CODE: | SP (Space) |
| FUNCTION: | Moves the print position one column to the right. |

Escape Sequences

This is a programmable command to tell the printer how to process data, it consists of a decimal or hexadecimal ESC control code followed by a specified character. Please refer to the reference material provided with your computer or software.

Job Control

Select special features of the printer:

| | |
|-----------|---|
| SEQUENCE: | ESC z (Interface self-test) |
| FUNCTION: | Instructs the printer to perform an interface self-test. When the printer receives ESC z, data processing stops, the current page is printed and then self-test is executed without data loss. If no error is detected the printer remains on-line and continues its work, if an error is detected the printer goes off-line. |
| SEQUENCE: | ESC E (Printer reset) |
| FUNCTION: | Instructs the printer to complete printing any partial pages of data received before ESC E and then resets all programmable features to panel default values and deletes temporary fonts and macros. Following the reset, the printer remains on-line and continues to process data using the default values. |
| SEQUENCE: | ESC &ℓ#X (Number of copies) |
| FUNCTION: | Selects the number of copies (# = 1 to 99) for each page to be printed. Can be inserted anywhere in a page. Default = 1 |

Line and Page Control

The escape sequences control page orientation, page length, margins, line feed, perforation skip, etc.

SEQUENCE:

ESC &l#H (Paper handling)

FUNCTION:

Selects the paper handling method for the printer. Can be received inserted in the page, remains effective until another paper handling command is received by the printer or a paper handling command is changed by key input. The table below shows the available paper handling methods:

Paper input control

The value field (#) specifies the paper input method as shown in the following table:

| # | Method | |
|-------------|-----------------------|--------------------|
| 0 | eject page | |
| 1 (default) | paper cassette | |
| 2 | manual feed | |
| 3 | envelope manual feed | |
| 4 | second cassette unit* | |
| 6 | envelope feeder* | *Only with option. |

SEQUENCE:

ESC &l#A (Page size)

FUNCTION:

Selects the page size.

The table below shows the page size selection values:

| Value (#) | Paper size |
|-------------|----------------------------------|
| 1 | Executive (7.25" × 10.5") |
| 2 (default) | Letter (8.5" × 11") |
| 3 | Legal (8.5" × 14") |
| 24 | Invoice (8-1/2" × 5-1/2") |
| 26 | A4 (210mm × 297mm) |
| 31 | B5 (182mm × 257mm) |
| 32 | AFSP (8" × 10.5") |
| ENVELOPES: | |
| 80 | Monarch 7-3/4 (3-7/8" × 7-1/2") |
| 81 | Commercial 10 (4-1/8" × 9-1/2") |
| 90 | International DL (110mm × 220mm) |
| 91 | International C5 (162mm × 229mm) |

SEQUENCE: ESC &#P (Specify page length)
 FUNCTION: Specifies the physical length of the paper being used as the number of lines (#). Portrait or landscape orientation does not affect the specification. If the orientation is changed, specify the page length first. The table below shows page length values:

Portrait Orientation Page Length Settings

| Page size | Lines-per-inch setting | |
|-----------|------------------------|-----|
| | 6 | 8 |
| Letter | 66 | 88 |
| Legal | 84 | 112 |
| A4 | 70 | 93 |
| Executive | 63 | 84 |

Landscape Orientation Page Length Settings

| Page size | Lines-per-inch setting | |
|-----------|------------------------|----|
| | 6 | 8 |
| Letter | 51 | 68 |
| Legal* | —* | —* |
| A4 | 49 | 66 |
| Executive | 43 | 58 |

*When printing on legal size paper with landscape orientation, set the page length while in portrait orientation (ESC & 84 P) and then specify landscape orientation (ESC & 10). The lines per page setting is given by multiplying the lines per inch by the length of the page.

SEQUENCE: ESC &#O (Select page orientation)
 FUNCTION: Selects either portrait (# = 0) or landscape (# = 1) page orientation. Portrait orientation prints from left to right across the page, while landscape prints along the length of the page. Portrait orientation (ESC & 00) is the power up state of the printer.
 Orientation command sets the page length, top margin, text length, left and right margins, HMI and VMI to their panel default values, and disables the auto overlay macro.

SEQUENCE: ESC &#E (Specify top margin)
 FUNCTION: Specifies the top margin of the current page as the number of lines (#) to be skipped. Top margin values range from 0 to the page length (default is 1/2 inch from the top of the page). Avoid using a top margin value (#) of 0 or 1 because the top two lines are in the unprintable border region. If VMI is set to 0 or a top margin greater than the page length is specified, ESC &#E will be ignored.

SEQUENCE: ESC &l#F (Specify text length)
 FUNCTION: Specifies the number of lines (#) of text to be printed on a page. If a text length value of 0 is specified, the text length is defaulted 1/2 inch from the bottom of the page. If the specified text length minus the bottom margin is greater than the page length, ESC &l#F will be ignored.

SEQUENCE: ESC &a#L (Set left margin)
 FUNCTION: Sets the left margin at a specified column number (#). A left margin value of 0 sets the margin to the leftmost print column (column 0). Column 0 is the default left margin. If the specified left margin exceeds the right margin, ESC &a#L is ignored.

SEQUENCE: ESC &a#M (Set right margin)
 FUNCTION: Sets the right margin at a specified column number (#). The rightmost print column is the default right margin. If the specified right margin is equal to or less than the left margin, ESC &a#M is ignored.

SEQUENCE: ESC 9 (Clear side margin settings)
 FUNCTION: Clears the left and right margin settings set by ESC &a#L and ESC &a#M and returns the margins to the default values. ESC9 followed by CR (carrier return) also returns the cursor to the default left margin.

SEQUENCE: ESC &l#L (Perforation skip mode)
 FUNCTION: Enables (# = 1) or disables (# = 0) the perforation skip mode. If perforation skip is enabled (ESC &l1L), the printer stops printing at the bottom margin, and then continues printing from the top margin of the next page. When perforation skip is disabled, the bottom margin is disabled.
 Default = enable

Note: If you print in the perforation skip area and enter the unprintable border region, data loss will result.

SEQUENCE: ESC &k#H (Set horizontal motion index)
 FUNCTION: Allows the pitch of a current fixed spacing font to be changed. The pitch value specifies the spacing of the individual characters (printed characters, space, and backspace) in 1/120 inch increments. If a proportional font is current, only the space character is affected by ESC &k#H. The HMI (horizontal motion index) setting is defaulted (erased) by switching between primary and secondary fonts and by specified font orientation, symbol set, pitch, spacing or height. The value may range from 0 to 840. The value field is valid to four decimal places. The table below shows examples of pitch values:

| <u>Value (#)</u> | <u>Pitch (cpi)</u> |
|------------------|--------------------|
| 10 | 12 |
| 12 | 10 |

SEQUENCE: ESC &#C (Set vertical motion index)
 FUNCTION: Sets the vertical line spacing of printed text in 1/48th inch increments. The value range for # is 0 to 336 and can be specified to four decimal places. The table below shows examples of VMI values:
 This command affects the line feed and half line feed spacing.

| <u>Value (#)</u> | <u>Line spacing</u> |
|------------------|---------------------|
| 0 (min) | 0 inch (overprint) |
| 24 | 0.5 inch |
| 48 | 1 inch |
| 72 | 1.5 inches |
| 96 | 2 inches |
| 120 | 2.5 inches |
| 336 (max) | 7 inches |

SEQUENCE: ESC &#D (Set lines per inch)
 FUNCTION: Set the vertical line spacing of the printed text in lines per inch. The power on state of the printer is 6 lines per inch. The lines per inch values are shown below:

Value (#): 1, 2, 3, 4, 6, 8, 12, 16, 24, and 48 (lines per inch)

Cursor Control

Control cursor positioning for the printer:

SEQUENCE: ESC &a#C (Horizontal cursor control — columns)
 FUNCTION: For horizontal positioning of the cursor in increments of the current column pitch (characters per inch) within the print limits of the page. Column values exceeding the print limits of the page will position the cursor at the left or right limits of the current page. A + or – before the column value (#) moves the cursor relative to the current cursor position (+ to the right; – to the left). A column value without a + or – positions the cursor relative to the left margin (# = 0). The value field is valid to four decimal places. The table below shows examples of column values:

| <u>Value (#)</u> | <u>Current pitch (cpi)</u> | <u>Horizontal movement</u> |
|------------------|----------------------------|----------------------------|
| 0 | any setting | current position |
| 30 | 10 | 3 inches |
| 36 | 12 | 3 inches |

SEQUENCE: ESC &a#R (Vertical cursor control — lines)
 FUNCTION: For vertical positioning of the cursor in increments of the current line pitch (lines per inch) within the print limits of the page. Line values exceeding the print limits of the page will position the cursor at the top of the current page or cause a page eject if the bottom of the page is exceeded. A + or – before the column value (#) moves the cursor relative to the current cursor position (+ down; – up). A column value without a + or – positions the cursor relative to the top margin (# = 0) as a line margin. The value field is valid to four decimal places. The table below shows examples of line values:

| <u>Current value (#)</u> | <u>Lines per inch (lpi)</u> | <u>Vertical movement</u> |
|--------------------------|-----------------------------|--------------------------|
| 0 | any setting | current position |
| 18 | 6 | 3 inches |
| 24 | 8 | 3 inches |

SEQUENCE: ESC *p#X (Horizontal cursor control — dots)
 FUNCTION: For horizontal positioning of the cursor in increments of dots (300 dpi) within the print limits of the page. A + or – before the dot value (#) moves the cursor relative to the current cursor position (+ to the right; – to the left). A dot value without a + or – positions the cursor relative to the left margin (# = 0). The table below shows examples of dot values:

| <u>Value (#)</u> | <u>Horizontal movement</u> |
|------------------|----------------------------|
| 0 | current position |
| 150 | 1/2 inch |
| 900 | 3 inches |

SEQUENCE: ESC *p#Y (Vertical cursor control — dots)
 FUNCTION: For vertical positioning of the cursor in increments of dots (300 dpi) within the print limits of the page. A + or – before the dot value (#) moves the cursor relative to the current cursor position (+ down; – up). A dot value without a + or – positions the cursor relative to the top margin (# = 0). The previous table (ESC *p#X) shows examples of dot values.

SEQUENCE: ESC &a#H (Horizontal cursor control — decipoints)
 FUNCTION: For horizontal positioning of the cursor in increments of decipoints (1/720 inch) within the print limits of the page. A + or – before the decipoint value (#) moves the cursor relative to the current cursor position (+ to the right; – to the left). A decipoint value without a + or – sign positions the cursor relative to the left margin (# = 0). The value field is valid to two decimal points. The table below shows examples of decipoint values:

| <u>Value (#)</u> | <u>Horizontal movement</u> |
|------------------|----------------------------|
| 0 | current position |
| 360 | 1/2 inch |
| 2160 | 3 inches |

SEQUENCE: ESC &a#V (Vertical cursor control — decipoints)
 FUNCTION: For vertical positioning of the cursor in increments of decipoints (1/720 inch) within the print limits of the page. A + or – before the decipoint value (#) moves the cursor relative to the current cursor position (+ down; – up). A decipoint value without a + or – positions the cursor relative to the top margin (# = 0). The value field is valid to two decimal places. The previous table (ESC &a#H) shows examples of decipoint values.

SEQUENCE: ESC = (Forward feed one half line)
 FUNCTION: Moves the print position forward one half line at the current lines per inch (ESC &l#D) or VMI (ESC &l#C) setting for one line only.

SEQUENCE: ESC &k#G (Print line termination)
 FUNCTION: Selects the printer's interpretation of the computer's line termination character.
 The table below shows the print line termination selection values:

| <u>Value (#)</u> | <u>Computer termination</u> | <u>Printer interpretation</u> |
|------------------|---------------------------------|-----------------------------------|
| 0 (default) | CR | CR |
| | LF | LF |
| | FF | FF |
| 1 | CR | CR + LF |
| | LF | LF |
| | FF | FF |
| 2 | CR | CR |
| | LF | CR + LF |
| | FF | CR + FF |
| 3 | CR | CR + LF |
| | LF | CR + LF |
| | FF | CR + FF |

CR = Carriage Return
 LF = Line feed
 FF = Form feed

SEQUENCE: ESC &f#S (Push/pop position)
 FUNCTION: Allows the cursor position to be saved (pushed) and recalled (popped) at any time. Up to 20 cursor positions can be stored at one time with the last cursor position pushed (# = 0) being the first position popped (# = 1), the second cursor position is next in line to be popped, etc. The example below shows push/pop usage:

ESC &a100h200V Sends cursor to position (100, 200).
 ESC &f0S Pushes the current cursor position.
 ESC &a200h300V Sends cursor to position (200, 300).
 ESC &f0S Pushes the current cursor position.
 ESC &a400h500V Sends cursor to position (400, 200).
 ESC &f1S Pops the cursor to the last pushed cursor position (200, 300).
 ESC &f1S Pops the cursor to the next to last pushed cursor position (100, 200)

Character and Font Control

The character and font escape sequence codes control the creation of characters and fonts.

SEQUENCE: ESC (# # (Select primary font symbol set)
 ESC) # # (Select secondary font symbol set)
 FUNCTION: Select the primary and secondary font symbol sets. The following table lists examples of symbol sets.

| <u>Symbol set</u> | <u>Primary font escape sequence</u> | <u>Secondary font escape sequence</u> |
|--|---|---|
| Math-7 | ESC (0 A | ESC) 0 A |
| Line Draw | ESC (0 B | ESC) 0 B |
| ISO 60: Norwegian version 1 | ESC (0 D | ESC) 0 D |
| ISO 61: Norwegian version 2 | ESC (1 D | ESC) 1 D |
| Roman Extensions | ESC (0 E | ESC) 0 E |
| ISO 4: United Kingdom | ESC (1 E | ESC) 1 E |
| ISO 25: French | ESC (0 F | ESC) 0 F |
| ISO 69: French | ESC (1 F | ESC) 1 F |
| German | ESC (0 G | ESC) 0 G |
| ISO 21: German | ESC (1 G | ESC) 1 G |
| Greek-8 | ESC (8 G | ESC) 8 G |
| ISO 15: Italian | ESC (0 I | ESC) 0 I |
| ISO 14: JIS-ASCII | ESC (0 K | ESC) 0 K |
| ISO 57: Chinese | ESC (2 K | ESC) 2 K |
| Technical-7 | ESC (1 M | ESC) 1 M |
| Math-8 | ESC (8 M | ESC) 8 M |
| ISO 100: ECMA-94 (Latin 1) | ESC (0 N | ESC) 0 N |
| OCRA | ESC (0 O | ESC) 0 O |
| OCRB | ESC (1 O | ESC) 1 O |
| ECMA-94 (Latin 1) (JX-9C5Z Z Font card) | ESC (11Q | ESC) 11Q |
| ISO 11: Swedish | ESC (0 S | ESC) 0 S |
| Spanish | ESC (1 S | ESC) 1 S |
| ISO 17: Spanish | ESC (2 S | ESC) 2 S |
| ISO 10: Swedish | ESC (3 S | ESC) 3 S |
| ISO 16: Portuguese | ESC (4 S | ESC) 4 S |
| ISO 84: Portuguese | ESC (5 S | ESC) 5 S |
| ISO 85: Spanish | ESC (6 S | ESC) 6 S |
| ISO 6: ASCII | ESC (0 U | ESC) 0 U |
| Legal | ESC (1 U | ESC) 1 U |

ISO 2: International

| | | |
|-------------------|------------|------------|
| Reference Version | ESC (2 U | ESC) 2 U |
| OEM-1 | ESC (7 U | ESC) 7 U |
| Roman-8 | ESC (8 U | ESC) 8 U |
| PC-8 | ESC (10 U | ESC) 10 U |
| PC-8 (D/N) | ESC (11 U | ESC) 11 U |
| Pi Font | ESC (15 U | ESC) 15 U |

SEQUENCE: ESC (s#P (Select primary font character spacing)
 FUNCTION: Selects proportional (# = 1) or fixed (# = 0) character spacing for the primary font. Fixed spacing assigns all characters the same amount of space, while proportional spacing assigns different spacing depending on the characters' horizontal spread (an M receives more space than an I). The resident default font spacing is fixed. If the printer does not contain a proportionally spaced primary font, ESC (s1P will be ignored.

SEQUENCE: ESC)s#P (Select secondary font character spacing)
 FUNCTION: Selects proportional (# = 1) or fixed (# = 0) character spacing for the secondary font. Fixed spacing assigns all characters the same amount of space, while proportional spacing assigns different spacing depending on the characters' horizontal spread (an M receives more space than an I). The resident default font spacing is fixed. If the printer does not contain a proportionally spaced secondary font, ESC)s1P will be ignored.

SEQUENCE: ESC (s#H (Select primary font pitch)
 FUNCTION: Selects the pitch (characters per inch) to print the primary character font. To print in the specified pitch, a font with the specified pitch must be loaded, or a font with the next smallest pitch will be automatically selected. If a font with a smaller pitch does not exist, then a font with the next largest pitch will be selected. Font pitch is ignored if proportional spacing is active and available in the requested symbol set. The table below shows examples of pitch values: The factory default primary pitches are 10 cpi.

| Value (#) | Pitch (cpi) |
|-----------|-------------|
| 10 | 10 |
| 12 | 12 |
| 16.66 | 16.66 |

cpi = characters per inch

SEQUENCE: ESC)s#H (Select secondary font pitch)
 FUNCTION: Selects the pitch (characters per inch) to print the secondary character font. To print in the specified pitch, a font with the specified pitch must be loaded, or a font with the next smallest pitch will be automatically selected. If a font with a smaller pitch does not exist, then a font with the next largest pitch will be selected. Font pitch is ignored if proportional spacing is active and available in the requested symbol set. The previous table (ESC (s#H) shows examples of pitch values.
 The factory default secondary pitches are 10 cpi.

SEQUENCE: ESC (s#V (Select primary font point size)
 FUNCTION: Selects the font size (character height) to print the primary character font. The table below shows examples of point values:
 The factory default height is 12 points.
 One point is 1/72 inch.

| <u>Value (#)</u> | <u>Point size</u> |
|------------------|-------------------|
| 7 | 7 |
| 8 | 8 |
| 8.5 | 8.5 |
| 10 | 10 |
| 12 | 12 |
| 14.4 | 14.4 |

SEQUENCE: ESC)s#V (Select secondary font point size)
 FUNCTION: Selects the font size (character height) to print the secondary character font. The previous table (ESC (s#V) shows examples of point values.
 The factory default height is 12 points.

SEQUENCE: ESC (s#S (Select primary font character style)
 FUNCTION: Selects the character style (upright or italic) to print the primary character font. To print italics, an italic font must be loaded. The table below shows the character style values:
 The factory default style is upright.

| <u>Value (#)</u> | <u>Character style</u> |
|------------------|------------------------|
| 0 | upright |
| 1 | italic |

SEQUENCE: ESC)s#S (Select secondary font character style)
 FUNCTION: Selects the character style (upright or italic) to print the secondary character font. To print italics, an italic font must be loaded. The table above (ESC (s#S) shows the character style values.
 The factory default style is upright.

SEQUENCE: ESC (s#B (Select primary font thickness)
 FUNCTION: Selects the character thickness (stroke weight) to print the primary character font. To print a different character thickness, a font with that thickness font must be loaded. The table below shows the thickness values:
 The factory default primary stroke weight is zero.

| <u>Value (#)</u> | <u>Thickness</u> |
|------------------|------------------|
| -7 | Ultra Thin |
| -5 | Thin |
| -3 | Light |
| 0 | Medium |
| +3 | Bold |
| +5 | Black |
| +7 | Ultra Black |

If the specified stroke weight is greater than or equal to 0 and is not available, the next thicker available stroke weight will be selected. If no thicker stroke weight is available, the closest available thinner stroke weight will be selected.

If the specified stroke weight is less than zero and is not available, the next thinner available stroke weight will be selected. If no thinner stroke weight is available, the closest available thicker stroke weight will be selected.

SEQUENCE: ESC)s#B (Select secondary font thickness)
 FUNCTION: Selects the character thickness (stroke weight) to print the secondary character font. To print a different character thickness, a font with that thickness must be loaded. The previous table (ESC (s#B) shows the thickness values. The factory default primary stroke weight is zero.

SEQUENCE: ESC (s#T (Select primary font typeface)
 FUNCTION: Selects the typeface to print the primary character font. To print a different character typeface, a font with that typeface must be loaded. The table below shows the typeface values:
 The factory default primary font typeface is courier.

| Value (#) | Typeface |
|-----------|--------------------------------|
| 0 | Line printer |
| 1 | Pica |
| 2 | Elite |
| 3 | Courier |
| 4 | Helvetica |
| 5 | Times roman |
| 6 | Gothic |
| 7 | Script |
| 8 | Prestige |
| 9 | Caslon * |
| 10 | Orator * |
| 11 | Presentations |
| 17 | Optima * |
| 18 | Garamond * |
| 19 | Cooper Black * |
| 20 | Coronet Bold * |
| 21 | Broadway * |
| 22 | Bouer Bodoni Black Condensed * |
| 23 | Century Schoolbook * |
| 24 | University Roman * |

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SEQUENCE: ESC)s#T (Select secondary font typeface)
 FUNCTION: Selects the typeface to print the secondary character font. To print a different character typeface, a font with that typeface must be loaded. The previous table (ESC (s#T) shows the typeface values. The factory default secondary font typeface is courier.

SEQUENCE: ESC &k#S (Select font pitch)
 FUNCTION: Selects either standard pitch (10 characters per inch) or compressed pitch (16.66 characters per inch) to print both primary and secondary character fonts. The table below shows the pitch values:

| <u>Value (#)</u> | <u>Pitch (cpi)</u> |
|------------------|--------------------|
| 0 | 10 |
| 2 | 16.66 |

SEQUENCE: ESC (# @ (Primary font default)
 FUNCTION: Selects different font/symbol sets for the primary font with the current page orientation.

| <u>Value (#)</u> | <u>Primary font default function</u> |
|------------------|---|
| 3 | Selects the default font (current page orientation must be maintained) and sets the primary font characteristics to the default font. If the font is proportionally spaced, the pitch (cpi) is not changed. |

SEQUENCE: ESC)# @ (Secondary font default)
 FUNCTION: Selects different font/symbol sets for the secondary font in the current page orientation.

| <u>Value (#)</u> | <u>Secondary font default function</u> |
|------------------|---|
| 3 | Selects the default secondary font (current page orientation must be maintained) and sets the secondary font characteristics to the default font. If the font is proportionally spaced, the pitch (cpi) is not changed. |

SEQUENCE: ESC &d#D (Select automatic underline)
 FUNCTION: Underlines all following characters until canceled by ESC &d@ (the next escape sequence). The factory default is underline disabled.

| <u>#</u> | |
|----------|-------------------|
| 0 | Fixed position |
| 3 | Floating position |

SEQUENCE: ESC &d@ (Cancel automatic underline)
 FUNCTION: Cancels the underline mode set by ESC &d#D.

SEQUENCE: ESC *c#D (Font ID)
 FUNCTION: Labels a particular font with a number for identification purposes. The number range of the font ID value (#) is 0 to 32767, however, the printer can store a maximum of 32 fonts at one time. Default ID is 0.

SEQUENCE: ESC *c#F (Character and font control)
 FUNCTION: Specifies the font/character control function to be performed on the font last specified by the ESC *c#D (Specify font ID) escape sequence. # specifies the control function. The table below shows descriptions of the font/character control values:

| Value (#) | Font and character control functions |
|-----------|---|
| 0 | Delete all fonts (temporary and permanent) |
| 1 | Delete all temporary fonts |
| 2 | Delete font (last font ID specified) |
| 3 | Delete character code (font ID and character code previously specified) |
| 4 | Make font temporary (last font ID specified) |
| 5 | Make font permanent (last font ID specified) |
| 6 | Copy/assign current font (last font ID specified) |

Font/character control functions 2 to 6 must be preceded by a font ID escape sequence.

Note: If any part of the current font is deleted, the page is closed, all pages are printed, and then the font is deleted. If a font is deleted and not used on the current page, all pages (except the current page) are printed, and then the font is deleted.

SEQUENCE: ESC (#X (Designate primary download font)
 FUNCTION: Designates a particular downloaded font as the primary (default) font. The (#) value designates one of up to 32 fonts previously labeled by the font ID escape sequence (ESC *c#D). If the designated font is present and properly oriented, all of its characteristics (except orientation) become those of the primary font. If the designated font is proportionally spaced, the pitch (cpi) is not changed.

SEQUENCE: ESC)#X (Designate secondary download font)
 FUNCTION: Designates a particular downloaded font as the secondary font. The(#) value designates one of up to 32 fonts previously labeled by the font ID escape sequence (ESC *c#D). If the designated font is present and properly oriented, all of its characteristics (except orientation) become those of the secondary font. If the designated font is proportionally spaced, the pitch (cpi) is not changed.

SEQUENCE:

FUNCTION:

ESC)s#W [DATA] (Download font description)

Creates a font header which describes the characteristics of the font last specified by the font ID. The field value (#) specifies the number of bytes in the font descriptor data field. If a font with the same font ID exists, the previous font will be deleted from printer memory when the new valid download font escape sequence is received. If there is not enough memory to create the new font, the new font and the font with the same font ID are deleted.

| Byte | 15-MSB | 8 | 7 | LSB-0 |
|-------|----------------------|---|------------------|-------|
| 0 | Font Descriptor Size | | | |
| 2 | Reserved | | Font Type | |
| 4 | Reserved | | | |
| 6 | Baseline Distance | | | |
| 8 | Cell Width | | | |
| 10 | Cell Height | | | |
| 12 | Orientation | | Spacing | |
| 14 | Symbol Set | | | |
| 16 | Pitch (Default HMI) | | | |
| 18 | Height | | | |
| 20 | xHeight | | | |
| 22 | Width Type | | Style | |
| 24 | Stroke Weight | | Typeface | |
| 26 | Reserved | | Serif Style | |
| 28 | Reserved | | | |
| 30 | Underline Distance | | Underline Height | |
| 32 | Text Height | | | |
| 34 | Text Width | | | |
| 36 | Reserved | | | |
| 38 | Reserved | | | |
| 40 | Pitch Extended | | Height Extended | |
| 42 | Reserved | | | |
| 44 | Reserved | | | |
| 46 | Reserved | | | |
| 48-63 | Font Name | | | |

Font descriptor size:

Data byte 0 specifies the number of bytes in the font descriptor. This value is ignored by your Laser Printer but should be set to 64.

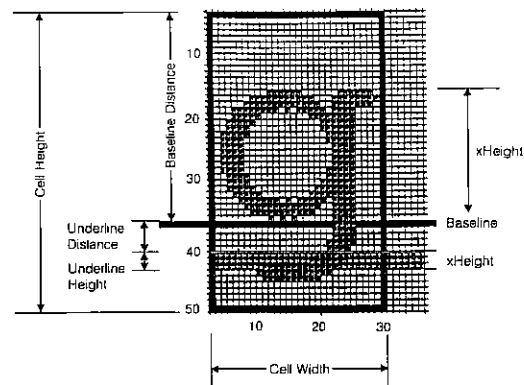
Font type:

Data byte 3 specifies the font as being 7-bit or 8-bit.

| Value | Font type |
|-------|--|
| 0 | 7-bit font (print characters 32-127 decimal) |
| 1 | 8-bit font (print characters 32-127 and 160-255 decimal) |
| 2 | pc-8 (all character codes are printable except 0, 7 to 15, and 27 decimal) |

Baseline distance:

Data bytes 6 and 7 specify the distance from the top of the character cell to the baseline in dots. The value is the same for portrait or landscape orientation; see the following figure. The baseline must be contained within the character cell. Therefore the value of the baseline distance falls between 0 and the cell height minus 1.



The character cell
(Portrait orientation)

Cell width:

Data bytes 8 and 9 specify the width of the character cell in dots. The cell width range is 1 to 4200 dots.

Cell height:

Data bytes 10 and 11 specify the height of the character cell in dots. The cell width range is 1 to 4200 dots.

Orientation:

Data byte 12 specifies the orientation of the font.

| <u>Value</u> | <u>Orientation</u> |
|--------------|--------------------|
| 0 | portrait |
| 1 | landscape |

Spacing:

Data byte 13 specifies fixed or proportional character spacing for the font.

| <u>Value</u> | <u>Spacing</u> |
|--------------|----------------|
| 0 | fixed |
| 1 | proportional |

Symbol set:

Data bytes 14 and 15 select the symbol set to be used for the new font. The number to select the symbol set is calculated by multiplying the number in the symbol set field value by 32, adding to it the decimal ASCII value of the letter, and then subtracting 64 from the total.

Symbol set field value = ROMAN 8 = 8 U = $8 \times 32 + (\text{ASCII value for U} = 85) - 64 = 256 + 85 - 64 = 277 = \text{Symbol set byte value}$

The following table lists the symbol sets, their field values and byte values.

| <u>Symbol set</u> | <u>Symbol set field value</u> | <u>Symbol set byte value</u> |
|-------------------------------|-----------------------------------|----------------------------------|
| Math-7 | 0 A | 1 |
| Line Draw | 0 B | 2 |
| ISO 60: Norwegian version 1 | 0 D | 4 |
| ISO 61: Norwegian version 2 | 1 D | 36 |
| Roman Extensions | 0 E | 5 |
| ISO 4: United Kingdom | 1 E | 37 |
| ISO 25: French | 0 F | 6 |
| ISO 69: French | 1 F | 38 |
| German | 0 G | 7 |
| ISO 21: German | 1 G | 39 |
| Greek-8 | 8 G | 263 |
| ISO 15: Italian | 0 I | 9 |
| ISO 14: JIS-ASCII | 0 K | 11 |
| ISO 57: Chinese | 2 K | 75 |
| Technical-7 | 1 M | 45 |
| Math-8 | 8 M | 269 |
| ISO 100: ECMA-94 (Latin 1) | 0 N | 14 |
| OCRA | 0 O | 15 |
| OCRB | 1 O | 47 |
| ISO 11: Swedish | 0 S | 19 |
| Spanish | 1 S | 51 |
| ISO 17: Spanish | 2 S | 83 |
| ISO 10: Swedish | 3 S | 115 |
| ISO 16: Portuguese | 4 S | 147 |
| ISO 84: Portuguese | 5 S | 179 |
| ISO 85: Spanish | 6 S | 211 |
| ISO 6: ASCII | 0 U | 21 |
| Legal | 1 U | 53 |
| ISO 2: Intl Reference Version | 2 U | 85 |
| OEM-1 | 7 U | 245 |
| Roman-8 | 8 U | 277 |
| PC-8 | 10 U | 341 |
| PC-8 (D/N) | 11 U | 373 |
| Pi Font | 15 U | 501 |

Pitch:

Data bytes 16 and 17 specify the pitch (dpi) of the font characters. The pitch value is calculated by dividing the horizontal resolution of the printer (300 dots per inch) by the desired pitch. The pitch is specified in increments of 1/4 (.25) of a dot and the pitch value can range from 0 to 16800. A value exceeding 16800 will be set to 16800.

Height:

Data bytes 18 and 19 specify the height of the font characters. The height value is calculated by multiplying the desired height (in dots) by 4. The height can be specified to 1/4 (.25) of a dot. The height value can range from 0 to 10922. A value exceeding 10922 will be set to 10922.

x height:

Specifies the height of the lower case "x" in quarter-dot units.
This is ignored by your Laser Printer.

Width type:

Specifies the proportionate width of characters in the font.
This is ignored by your Laser Printer.

Style:

Data byte 23 specifies upright or italic font characters.

| <u>Value</u> | <u>Style</u> |
|--------------|--------------|
| 0 | upright |
| 1 | italic |

Stroke weight:

Data byte 24 specifies the thickness of the strokes used in the font. The thickness value may vary from -7 to 7.

| <u>Value</u> | <u>Thickness</u> |
|--------------|----------------------|
| -7 | maximum light |
| -3 | light |
| 0 | normal (medium) |
| 3 | heavy (bold) |
| 7 | maximum heavy (bold) |

Typeface:

Data byte 25 specifies the typeface of the fonts.

| <u>Value (#)</u> | <u>Typeface</u> |
|------------------|--------------------------------|
| 0 | Line printer |
| 1 | Pica |
| 2 | Elite |
| 3 | Courier |
| 4 | Helvetica |
| 5 | Times Roman |
| 6 | Gothic |
| 7 | Script |
| 8 | Prestige |
| 9 | Caslon * |
| 10 | Orator * |
| 11 | Presentations |
| 17 | Optima * |
| 18 | Garamond * |
| 19 | Cooper Black * |
| 20 | Coronet Bold * |
| 21 | Broadway * |
| 22 | Bouer Bodoni Black Condensed * |
| 23 | Century Schoolbook * |
| 24 | University Roman * |

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Underline distance:

Data byte 30 specifies the distance from the baseline to the top dot row of the underline in dots.

A positive value specifies an underline position above the baseline. A negative value specifies an underline position below the baseline.

Underline height:

Data byte 31 specifies the thickness of the underline in dots.

Your Laser Printer always prints 3 dot thick underlines.

Text height:

Specifies the font's optimum inter-line spacing in quarter-dot units.

This is ignored by your Laser Printer.

Text width:

Specifies the font's optimum character spacing in quarter-dot units.

This is ignored by your Laser Printer.

Pitch extended:

Data byte 40 specifies Pitch Extended value.

This is an addition to the Pitch field which extends the pitch an extra eight bits. The value of this field is in 1024ths of one dot. For example, a 17 pitch font would have a Pitch field of 70 (17.5 dots, or 17.1429 cpi) and a Pitch Extended field of 150 (0.1465 dots additional, which gives 17.6465 dots, or 17.0005 cpi).

Height extended:

Data byte 41 specifies Height Extended value.

This is an additional to the Height field which extends the height an extra eight bits. The value field is in 1024ths of one dot. For example, a 10 point font would have a height field of 166 (41.5 dots, or 9.96 points) and a Height Extended field of 170 (0.1660 dots additional, which gives 9.9998 points).

Font name:

This is a 16-character ASCII field to which the user may assign a font name. Your Laser printer prints this font name on the Font Sample Printout.

SEQUENCE:

ESC (s#W [DATA] (Download character descriptor)

FUNCTION:

Downloads a character to the printer. The downloaded character is assigned the character code last specified and is added to the font specified by the font ID escape sequence (ESC *c#D). If an existing character has the same character code as the download character, the existing character is deleted from printer memory and the new character is downloaded. If there is not enough memory for the download character, the font will be deleted. The field value (#) specifies the number of bytes in the character descriptor/data field. The table below shows the character descriptor data values:

| Byte | 15-MSB | 8 | 7 | LSB-0 |
|------|------------------|---|--------------|-------|
| 0 | format (4) | | continuation | |
| 2 | description size | | class | |
| 4 | orientation | | always 0 | |
| 6 | left offset | | | |
| 8 | top offset | | | |
| 10 | character width | | | |
| 12 | character height | | | |
| 14 | delta X | | | |
| 16 | character data | | | |
| | ⋮ | | | |
| | ⋮ | | | |

Format:

Specifies the format of the character descriptor and data. The format number used by your Laser Printer is 4.

Continuation:

Specifies whether the following data is a character descriptor block (0) or a continuation of the data (1) associated with the previous character descriptor. Because the escape sequence value field is limited to 32767, characters whose number of descriptor and data block bytes would exceed this limit must be downloaded in two or more blocks. The following illustrates the format of a character data continuation block.

| Byte | 15-MSB | 8 | 7 | LSB-0 |
|------|---------------------------|---|------------------|-------|
| 0 | format | | continuation (1) | |
| 2 | character data: : : | | | |

Descriptor size:

Specifies the size of the character descriptor in bytes. The descriptor size used by your Laser Printer is 14.

Class:

Specifies the format of the character data. The character data format number used by your Laser Printer is 1.

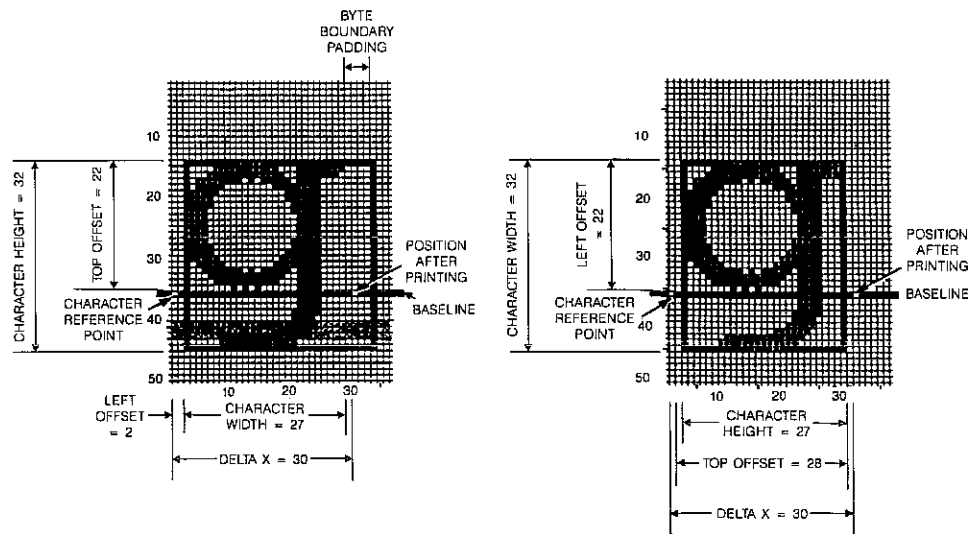
Orientation:

Data byte 4 specifies the orientation of the font.

| <u>Value</u> | <u>Orientation</u> |
|--------------|--------------------|
| 0 | portrait |
| 1 | landscape |

Left offset:

Data bytes 6 and 7 specify the distance from the reference point to the left side of the character pattern in dots. The value is relative to the physical page, so the value is different for portrait or landscape orientation, see the figure below. The range of left offset values is -4200 to 4200 .



The character cell
(portrait and landscape orientation)

Top offset:

Data bytes 8 and 9 specify the distance from the reference point to the top of the character pattern in dots. The value is relative to the page orientation, so the value is different for portrait or landscape orientation, see the figure above. The range of top offset values is -4200 to 4200 .

Character width:

Data bytes 10 and 11 specify the width of the character in dots. The character width value is relative to the page orientation, so the value is different for portrait or landscape orientation, see the figure above. The range of character width values is 1 to 4200.

Character height:

Data bytes 12 and 13 specify the height of the character in dots. The character height value is relative to the page orientation, so the value is different for portrait or landscape orientation, see the figure above. The range of character height value is 1 to 4200.

Delta X:

Data bytes 14 and 15 are used to specify the horizontal (X) distance the cursor will travel after printing a specified proportionally spaced character. Delta X is specified as the desired number of dots multiplied by 4. For example, if the desired character spacing is 5 dots, the delta X value would be 20 ($5 \times 4 = 20$). The range of delta X is 0 to 16800.

Character data:

Data bytes from 16 are the raw data used to represent the character. The character data is composed of a string of bytes that define the character. The bytes are defined in rows of bytes describing the character width. Each row of bytes is made up of binary data (0's and 1's). This binary data describes the dots and spaces (1's and 0's) the printer will receive, process, and print. The total number of character data equals the character width in bytes multiplied by the character height in dots.

SEQUENCE: ESC *c#E (Character code)

FUNCTION: Specifies the decimal ASCII value of a character to be downloaded. The character code value (#) can be a number from 0 to 255 which corresponds to an 8-bit ASCII character.

Graphics Control

These escape sequences control the resolution, start, transfer, and end of custom raster graphics development. Advanced escape sequence codes control the printing of rules, patterns and gray scales.

SEQUENCE: ESC *t#R (Raster graphics resolution)

FUNCTION: Sets the raster resolution (#) of the graphics to be printed. The default setting for graphics resolution is 75 dpi. The table below lists the maximum graphics image size using the four available resolutions.
If the optional 1.5 MB expansion memory is installed, up to a full page of graphics can be printed at 300 dpi.

| Resolution (#) | Maximum raster image |
|----------------|----------------------|
| 75 | full page |
| 100 | full page |
| 150 | full page |
| 300 | 30 sq inches |

SEQUENCE: ESC *r#A (Start raster graphics)

FUNCTION: Notifies the printer that graphics data will follow and specifies the page position where the graphics printing will start. If # = 0, graphics will be started at the leftmost print position (not the left margin) on the page. If # = 1, graphics will be started at the current cursor position, the cursor may be positioned before sending this command. When printing graphics with landscape orientation, the left graphics margin becomes the top of the page margin.

SEQUENCE: ESC *b#W [DATA] (Transfer raster graphics)
 FUNCTION: Specifies the number of binary graphics data bytes (#) to be sent to the printer for processing. The bytes of data are translated to bits of raster graphics data and sent to the printer one line (dot row) at a time. ESC *b#W must be sent to the printer for each line of graphics data.

SEQUENCE: ESC *rB (End raster graphics)
 FUNCTION: Informs the printer that all raster graphics data has been transferred to the printer and sets the printer to accept text data.

Example:

To print a raster graphic image of an arrow, carry out the following procedure:

1. Specify the cursor location:
 ESC*p300x400Y Specifies the point (300, 400) in the escape sequences.
2. Specify the resolution:
 ESC*t75R Sets the raster graphics resolution to 75 dots per inch.
3. Specify the start of raster graphics:
 ESC*r1A Specifies the start of graphics printing at the current position.
4. Transfer the raster graphics data:
 ESC *b#W Send the image data one line at a time.
5. Signal the end of raster graphics data:
 ESC*rB

SEQUENCE: ESC *c#A (Horizontal rectangle size — dots)
 FUNCTION: Specifies the length of a horizontal rectangle in dots (300 dpi). Power on or reset defaults the horizontal rectangle size to 0. Values greater than the page size are accepted, but are printed within the printable area boundaries.

Example: To specify a horizontal rectangle of 5 inches, input the escape sequence ESC *c1500A ($5 \times 300 = 1500$).

SEQUENCE: ESC *c#H (Horizontal rectangle size — decipoints)
 FUNCTION: Specifies the length of a horizontal rectangle in decipoints (720/inch). Power on or reset defaults the horizontal rectangle size to 0. Values greater than the page size are accepted, but are printed within the printable area boundaries.

Example: To specify a horizontal rectangle of 5 inches, input the escape sequence ESC *c3600H ($5 \times 720 = 3600$).

The value field is valid to four decimal places.

SEQUENCE: ESC *c#B (Vertical rectangle size — dots)
 FUNCTION: Specifies the length of a vertical rectangle in dots (300 dpi). Power on or reset defaults the vertical rectangle size to 0. Values greater than the page size are accepted, but are printed within the printable area boundaries.

Example: To specify a vertical rectangle of 5 inches, input the escape sequence ESC *c1500B ($5 \times 300 = 1500$).

SEQUENCE: ESC *c#V (Vertical rectangle size- decipoints)
 FUNCTION: Specifies the length of a vertical rectangle in decipoints (720/inch). Power on or reset defaults the vertical rectangle size to 0. Values greater than the page size are accepted, but are printed within the printable area boundaries.
 Example: To specify a vertical rectangle of a 5 inches, input the escape sequence ESC *c3600V ($5 \times 720 = 3600$).

SEQUENCE: ESC *c#P (Print rule/pattern)
 FUNCTION: Selects if a rule, a defined pattern, or a gray scale pattern is to be printed. It then commands the printer to start printing. When ESC *c#P is received, the area defined by the horizontal and vertical rule/pattern escape sequences is filled with the specified pattern. If a specified pattern or gray scale pattern is selected, the printer will print the pattern defined by the last pattern ID received. The table below shows the print value selections.

| Value (#) | Print selection |
|-----------|--------------------|
| 0 | black rule |
| 2 | gray scale pattern |
| 3 | defined pattern |

SEQUENCE: ESC *c#G (Pattern ID)
 FUNCTION: Selects 1 of 8 gray shade patterns or 1 of 6 defined patterns when used with the print rule (ESC *c#P) escape sequence. Out of range pattern ID values are ignored. The table below shows the pattern ID value selections for defined pattern and gray scale pattern printing.

Pattern ID values

| Value (#) | Defined pattern | Value (#) | Gray scale pattern |
|-----------|------------------|-----------|--------------------|
| 1 | horizontal lines | 1 to 2 | 2% gray |
| 2 | vertical lines | 3 to 10 | 10% gray |
| 3 | + 45 deg. lines | 11 to 20 | 15% gray |
| 4 | - 45 deg. lines | 21 to 35 | 30% gray |
| 5 | grid | 36 to 55 | 45% gray |
| 6 | 45 deg. grid | 56 to 80 | 70% gray |
| | | 81 to 99 | 90% gray |
| | | 100 | 100% gray (Black) |

Examples:

To print a 3 inch by 5 inch black area, carry out the following procedure:

- Specify the cursor location:
 ESC*p 300x400Y Specifies the point (300, 400) in the PCL coordinate system.
- Specify the width of the area:
 ESC*c900A Sets the width to 900 dots (3 inches).
- Specify the height of the area:
 ESC*c1500B Sets the height to 1500 dots (5 inches).
- Print the solid filled area:
 ESC*c0P

Macro Control

These escape sequences control the creation and use of macros. A macro is an escape sequence which combines other escape sequences to perform a task. The macro can be stored and then recalled to perform the same task again, the printer can store up to 32 macros at a time.

SEQUENCE: ESC &f#Y (Specify macro ID)
FUNCTION: Assigns an ID Number (#) to a macro. If you wish to store (download) or execute (retrieve) the macro, you must first use this escape sequence to name or refer to the macro. Up to 32 macros (# = 0 to 32767) can be numbered at one time. Default = 0

SEQUENCE: ESC &f#X (Define macro control)
FUNCTION: Specifies the macro control to be performed using the macro control values (# = 0 to 10). The table below shows the macro control values:

| Value (#) | Macro control function |
|-----------|-----------------------------|
| 0* | start macro definition |
| 1 | stop macro definition |
| 2* | execute macro |
| 3* | call macro |
| 4* | enable auto macro overlay |
| 5 | disable auto macro overlay |
| 6 | delete all macros |
| 7 | delete all temporary macros |
| 8* | delete macro |
| 9* | make macro temporary |
| 10* | make macro permanent |

* Must be preceded by a macro ID escape sequence.

Macro control function descriptions

| Value | Description |
|-------|--|
| 0 | ESC &f0X, start macro definition, creates a temporary macro identified by the macro ID preceding it. All data is read and stored until ESC &f1X (stop macro definition) or a reset is received. |
| 1 | ESC &f1X, stop macro definition, indicates the end of the macro data. |
| 2 | ESC &f2X, execute macro, identified by the macro ID in the current environment. When the macro has been executed, any escape sequences modified in the current environment by the macro are retained, however, the cursor position remains unchanged. See the table below for a listing of current environment escape sequences: |

Current environment escape sequences

| | |
|------------------------|-------------------------|
| Page length | Primary font address |
| Page orientation | Font ID |
| Input control | Character code |
| Copy count | Macro ID |
| Margins | VMI/line spacing |
| Top | Horizontal rule spacing |
| Left | Vertical rule size |
| Right | Underline mode |
| Perforation skip | Graphics resolution |
| Line termination | Graphics mode |
| EOL (wrap) termination | Graphics left margin |
| Font attributes | Pattern ID |
| HMI | |

- 3 ESC &f3X, call macro, executes the macro identified by the macro ID in the current environment. After the macro has executed, any escape sequences modified in the current environment by the macro are deleted, and the current environment reverts to its previous values. However, the cursor position remains unchanged. See the table above for a listing of current environment escape sequence.

- 4 ESC &f4X, enable auto macro overlay, defines the macro identified by the macro ID for use as the auto macro overlay, replacing any previous auto macro overlay. If ESC &f4X is received, every page printed is executed using the overlay environment and overlay default values. After the macro has executed, the previous current environment is restored, replacing the overlay environment. The following tables show a listing of current overlay environment escape sequences:

Overlay environment escape sequences

| | |
|------------------|-------------|
| Overlay | Page length |
| Page orientation | Copy count |
| Position stack | |

Overlay default values

| | |
|---------------------------|------------------------------|
| Top margin (1/2 in) | Font ID (0) |
| Bottom margin (1/2 in) | Character code (0) |
| Left margin (far left) | Macro ID (0) |
| Right margin (far right) | Current active position |
| Perf skip mode (enabled) | (Leftmost & top margin) |
| Line termination (0) | VMI/line spacing (6 lpi) |
| EOL wrap (off) | Horiz. rule size (0) |
| Font attributes (default) | Vert. rule size (0) |
| HMI (default) | Underline mode (off) |
| Primary font (default) | Graphics resolution (75 dpi) |
| Secondary font (default) | Graphics mode (off) |
| | Pattern ID (0) |

- 5 ESC &f5X, disable auto macro overlay, exits the auto macro overlay function at the current page. Changing the page length or orientation disables the auto macro overlay after ESC &f5X is executed.
- 6 ESC &f6X delete all macros (temporary, permanent and auto macro overlays) that may have been in effect.
- 7 ESC &f7X delete all temporary macros (including auto macro overlays) that may have been in effect.
- 8 ESC &f8X delete macro last specified by the macro ID escape sequence (ESC &f#Y).
- 9 ESC &f9X, make macro temporary, designates the macro last specified by the macro ID escape sequence (ESC &f#Y) to be a temporary macro.
- 10 ESC &f10X, make macro permanent, designates the macro last specified by the macro ID escape sequence (ESC &f#y) to be a permanent macro.

Example

Define a macro with ID 7:

Send: ESC&f7y0X

.

escape sequences, control codes, and data to be used when the macro is called

.

ESC&f1X

Make the macro with ID 7 permanent:

Send: ESC&f7y10X

Implement the macro with ID 7 for automatic overlay:

Send: ESC&f7y4X

Delete the macro with ID 7:

Send: ESC&f7y8X

Other Control

SEQUENCE: ESC Y (Select display functions mode)
FUNCTION: Disables all control codes and escape sequences and allows them to be printed as blanks (spaces) with two exceptions: carriage return (CR) is executed as a carriage return (CR) + line feed (LF), and ESC Z is executed and printed as a blank followed by a Z.

SEQUENCE: ESC Z (Cancel display functions mode)
FUNCTION: Cancels ESC Y and allows all valid control codes and escape sequences to be executed after it is received. ESC Z is the power on state of the printer.

SEQUENCE: ESC &p#X [DATA] (Select transparent print data)
FUNCTION: Sets the printer to process data without processing any control codes or escape sequences that may be included. The value field (#) specifies the number of bytes of data to be processed in this manner. Print data should follow immediately.

Example: To print a square bullet using the HP Laserjet II PC-8 Character Set, send the sequence:

ESC & p 1X(21)

SEQUENCE: ESC &s#C (Line wrap)
FUNCTION: Enables and disables line wrap. If enabled, the printer executes a CR + LF if all (or part) of a character falls outside the right margin. The table below shows the line wrap selection values:

| <u>Value (#)</u> | <u>Line wrap</u> |
|------------------|--------------------|
| 0 | enabled |
| 1 | disabled (default) |

Printer Command Table

| FUNCTION | SEQUENCE | COMMAND | PAGE |
|----------------------------------|-----------------------------|-----------|------|
| JOB CONTROL | | | |
| Interface self-test | | ESC z | 125 |
| Printer reset | | ESC E | 125 |
| Number of copies | | ESC &l #X | 125 |
| LINE and PAGE CONTROL | | | |
| Paper handling | Eject page | ESC &l0H | 126 |
| | Paper cassette | ESC &l1H | 126 |
| | Manual feed | ESC &l2H | 126 |
| | Envelope manual feed | ESC &l3H | 126 |
| | Second cassette unit | ESC &l4H | 126 |
| | Envelope feeder | ESC &l6H | 126 |
| PAGE LENGTH and SIZE | | | |
| Page size | Executive | ESC &l1A | 126 |
| | Letter | ESC &l2A | 126 |
| | Legal | ESC &l3A | 126 |
| | Invoice | ESC &l24A | 126 |
| | A4 | ESC &l26A | 126 |
| | B5 | ESC &l31A | 126 |
| | AFSP | ESC &l32A | 126 |
| | Monarch | ESC &l80A | 126 |
| | Commercial 10 (Business) | ESC &l81A | 126 |
| | International DL | ESC &l90A | 126 |
| | International C5 | ESC &l91A | 126 |
| | Number of lines | ESC &l #P | 127 |
| Page length | Portrait | ESC &l0O | 127 |
| Page orientation | Landscape | ESC &l1O | 127 |
| MARGINS and TEXT LENGTH | | | |
| Top margin | Number of lines | ESC &l #E | 127 |
| Text length | Number of lines | ESC &l #F | 128 |
| Left margin | Left (column number) | ESC &a #L | 128 |
| Right margin | Right (column number) | ESC &a #M | 128 |
| Clear side margin settings | | ESC 9 | 128 |
| PERFORATION SKIP MODE | | | |
| Perforation skip | Disable | ESC &l0L | 128 |
| | Enable | ESC &l1L | 128 |
| HORIZONTAL COLUMN SPACING | | | |
| Horizontal motion index | Number of 1/120" increments | ESC &k #H | 128 |
| VERTICAL LINE SPACING | | | |
| Set vertical motion index | Number of 1/48" increments | ESC &l #C | 129 |
| Set lines per inch | 1 line/inch | ESC &l1D | 130 |
| | 2 lines/inch | ESC &l2D | 130 |
| | 3 lines/inch | ESC &l3D | 130 |
| | 4 lines/inch | ESC &l4D | 130 |
| | 6 lines/inch | ESC &l6D | 130 |
| | 8 lines/inch | ESC &l8D | 130 |
| | 12 lines/inch | ESC &l12D | 130 |
| | 16 lines/inch | ESC &l16D | 130 |
| | 24 lines/inch | ESC &l24D | 130 |
| | 48 lines/inch | ESC &l48D | 130 |

Printer Command Table (cont)

| FUNCTION | SEQUENCE | COMMAND | PAGE |
|-----------------------------------|----------------------------------|----------|------|
| CURSOR CONTROL | | | |
| HORIZONTAL and VERTICAL | | | |
| Horizontal | Column | ESC &a#C | 130 |
| | Dots | ESC *p#X | 130 |
| Vertical | Decipoints | ESC &a#H | 130 |
| | Lines | ESC &a#R | 130 |
| | Dots | ESC *p#Y | 131 |
| Half line feed | Decipoints | ESC &a#V | 131 |
| | | ESC = | 131 |
| LINE TERMINATION | | | |
| Print line termination | CR=CR LF=LF FF=FF | ESC &k0G | 132 |
| | CR=CR+LF LF=LF FF=FF | ESC &k1G | 132 |
| | CR=CR LF=CR+LF FF=CR+FF | ESC &k2G | 132 |
| | CR=CR+LF LF=CR+LF FF=CR+FF | ESC &k3G | 132 |
| | | | |
| | | | |
| | | | |
| | | | |
| PUSH/POP POSITION | | | |
| Push/pop position | Push | ESC &f0S | 132 |
| | Pop | ESC &f1S | 132 |
| CHARACTER and FONT CONTROL | | | |
| SYMBOL SET SELECTION | | | |
| Primary font symbol set | Math7 | ESC (0A | 133 |
| | Line Draw | ESC (0B | 133 |
| | ISO 60: | | |
| | Norwegian Version 1 | ESC (0D | 133 |
| | ISO 61: | | |
| | Norwegian Version 2 | ESC (1D | 133 |
| | Roman Extension | ESC (0E | 133 |
| | ISO 4: | | |
| | United Kingdom | ESC (1E | 133 |
| | ISO 25: French | ESC (0F | 133 |
| | ISO 69: French | ESC (1F | 133 |
| | German | ESC (0G | 133 |
| | ISO 21: German | ESC (1G | 133 |
| | Greek8 | ESC (8G | 133 |
| | ISO 15: Italian | ESC (0I | 133 |
| | ISO 14: JIS ASCII | ESC (0K | 133 |
| | ISO 57: Chinese | ESC (2K | 133 |
| | Math8 | ESU (8M | 133 |
| | ISO 100: ECMA-94 | | |
| | (Latin 1) | ESC (0N | 133 |
| | OCR A | ESC (0O | 133 |
| | OCR B | ESC (1O | 133 |
| | ECMA-94(Latin 1) | | |
| | (JX-9C5Z Z Font card) | ESC (11Q | 133 |
| | ISO 11: | | |
| | Swedish | ESC (0S | 133 |

Printer Command Table (cont)

| FUNCTION | SEQUENCE | COMMAND | PAGE |
|----------------------------------|----------------------|-----------|------|
| Secondary font symbol set | Spanish | ESC (1S | 133 |
| | ISO 17: Spanish | ESC (2S | 133 |
| | ISO 10: Swedish | ESC (3S | 133 |
| | ISO 16: | | |
| | Portuguese | ESC (4S | 133 |
| | ISO 84: | | |
| | Portuguese | ESC (5S | 133 |
| | ISO 85: | | |
| | Spanish | ESC (6S | 133 |
| | ISO 6: ASCII | ESC (0U | 133 |
| | Legal | ESC (1U | 133 |
| | ISO 2: International | | |
| | Reference Version | ESC (2U | 134 |
| | OEM-1 | ESC (7U | 134 |
| | Roman-8 | ESU (8U | 134 |
| | PC-8 | ESC (10U | 134 |
| | PC-8 (D/N) | ESC (11U | 134 |
| | Pi Font | ESC (15U | 134 |
| Secondary font symbol set | ESC)# # | 133 | |
| SPACING | | | |
| Primary font character spacing | Proportional | ESC (s1P | 134 |
| | Fixed | ESC (s0P | 134 |
| Secondary font character spacing | Proportional | ESC)s1P | 134 |
| | Fixed | ESC)s0P | 134 |
| PITCH | | | |
| Primary font pitch | | ESC (s#H | 134 |
| Secondary font pitch | | ESC)s#H | 134 |
| POINT SIZE | | | |
| Primary font point size | | ESC (s#V | 135 |
| Secondary font point size | | ESC)s#V | 135 |
| STYLE | | | |
| Primary font style | Upright | ESC (s0S | 135 |
| | Italic | ESC (s1S | 135 |
| Secondary font style | Upright | ESC)s0S | 135 |
| | Italic | ESC)s1S | 135 |
| CHARACTER THICKNESS | | | |
| Primary font thickness | Ultra thin | ESC (s-7B | 135 |
| | Thin | ESC (s-5B | 135 |
| | Light | ESC (s-3B | 135 |
| | Medium | ESC (s0B | 135 |
| | Bold | ESC (s+3B | 135 |
| | Black | ESC (s+5B | 135 |
| | Ultra black | ESC (s+7B | 135 |
| Secondary font thickness | | ESC)s#B | 136 |
| TYPEFACE | | | |
| Primary font typeface | Line Printer | ESC (s0T | 136 |
| | Pica | ESC (s1T | 136 |
| | Elite | ESC (s2T | 136 |
| | Courier | ESC (s3T | 136 |
| | Helvetica | ESC (s4T | 136 |
| | Times Roman | ESC (s5T | 136 |
| | Gothic | ESC (s6T | 136 |

Printer Command Table (cont)

| FUNCTION | SEQUENCE | COMMAND | PAGE |
|------------------------------------|----------------------------|--------------------|------|
| Secondary font typeface | Script | ESC {s7T | 136 |
| | Prestige | ESC {s8T | 136 |
| | Caslon | ESC {s9T | 136 |
| | Orator | ESC {s10T | 136 |
| | Presentations | ESC {s11T | 136 |
| | Optima | ESC {s17T | 136 |
| | Garamond | ESC {s18T | 136 |
| | Cooper Black | ESC {s19T | 136 |
| | Coronet Bold | ESC {s20T | 136 |
| | Broadway | ESC {s21T | 136 |
| | Bauer Bodoni | | |
| | Black Condensed | ESC {s22T | 136 |
| | Century Schoolbook | ESC {s23T | 136 |
| | University Roman | ESC {s24T | 136 |
| | | ESC }s #T | 136 |
| FONT PITCH | | | |
| Primary & secondary | | | |
| Font pitch | 10.00 pitch | ESC &k0S | 137 |
| (Alternate method) | 16.66 pitch | ESC &k2S | 137 |
| Font default | Primary font | ESC {3@ | 137 |
| | Secondary font | ESC }3@ | 137 |
| UNDERLINE | | | |
| Automatic underline | Fixed position | ESC &d0D | 137 |
| | Floating position | ESC &d3D | 137 |
| | Cancel | ESC &d@ | 137 |
| FONT MANAGEMENT | | | |
| Font ID | Font ID number | ESC *c#D | 137 |
| Character and font control | Delete all fonts | ESC *c0F | 138 |
| | Delete all temporary fonts | ESC *c1F | 138 |
| | Delete font | ESC *c2F | 138 |
| | Make font temporary | ESC *c4F | 138 |
| | Make font permanent | ESC *c5F | 138 |
| FONT SELECTION BY ID NUMBER | | | |
| Designate download fonts | Primary font | ESC (#X | 138 |
| | Secondary font | ESC)#X | 138 |
| SOFT FONT CREATION | | | |
| Download font description | Number of bytes | ESC }s#W [DATA] | 139 |
| Download character descriptor | Number of bytes | ESC {s#W [DATA] | 144 |
| Character code | Decimal ASCII | ESC *c#E | 147 |
| GRAPHICS CONTROL | | | |
| RASTER GRAPHICS | | | |
| Resolution | 75 dots per inch | ESC *t75R | 147 |
| | 100 dots per inch | ESC *t100R | 147 |
| | 150 dots per inch | ESC *t150R | 147 |
| | 300 dots per inch | ESC *t300R | 147 |
| Start raster graphics | Left graphics margin | ESC *r0A | 147 |
| | Current cursor | ESC *r1A | 147 |
| Transfer raster graphics | Number of rows | ESC *b#W [DATA] | 148 |
| End raster graphics | | ESC *rB | 148 |

Printer Command Table (cont)

| FUNCTION | SEQUENCE | COMMAND | PAGE |
|--------------------------------------|----------------------------|------------|------|
| RECTANGLE DIMENSIONS | | | |
| Rectangle width (Horizontal size) | Number of dots | ESC *c#A | 148 |
| | Number of decipoints | ESC *c#H | 148 |
| Rectangle height (Vertical size) | Number of dots | ESC *c#B | 148 |
| | Number of decipoints | ESC *c#V | 149 |
| RECTANGULAR AREA FILL | | | |
| Print rule/pattern | Black rule | ESC *c0P | 149 |
| | Gray scale pattern | ESC *c2P | 149 |
| | Defined pattern | ESC *c3P | 149 |
| Defined pattern | Horizontal line | ESC *c1G | 149 |
| | Vertical lines | ESC *c2G | 149 |
| | + 45 deg. lines | ESC *c3G | 149 |
| | - 45 deg. lines | ESC *c4G | 149 |
| | Grid | ESC *c5G | 149 |
| Gray scale pattern | 45 deg. grid | ESC *c6G | 149 |
| | 2% gray | ESC *c2G | 149 |
| | 10% gray | ESC *c10G | 149 |
| | 15% gray | ESC *c15G | 149 |
| | 30% gray | ESC *c30G | 149 |
| | 45% gray | ESC *c45G | 149 |
| | 70% gray | ESC *c70G | 149 |
| | 90% gray | ESC *c90G | 149 |
| | 100% gray | ESC *c100G | 149 |
| MACRO CONTROL | | | |
| MACRO ID and CONTROL | | | |
| Macro ID | Macro ID number | ESC &f#Y | 150 |
| Define macro control | Start macro definition | ESC &f0X | 150 |
| | Stop macro definition | ESC &f1X | 150 |
| | Execute macro | ESC &f2X | 150 |
| | Call macro | ESC &f3X | 150 |
| | Enable auto macro overlay | ESC &f4X | 150 |
| | Disable auto macro overlay | ESC &f5X | 150 |
| | Delete all macros | ESC &f6X | 150 |
| | Delete all temp. macros | ESC &f7X | 150 |
| | Delete all macro | ESC &f8X | 150 |
| | Make macro temporary | ESC &f9X | 150 |
| | Make macro permanent | ESC &f10X | 150 |
| OTHER CONTROL | | | |
| Select display functions | | ESC Y | 153 |
| Cancel display functions | | ESC Z | 153 |
| Transparent print data | Number of bytes | ESC &p#X | |
| | | [DATA] | 153 |
| Line wrap | Enabled | ESC &s0C | 153 |
| | Disabled (default) | ESC &s1C | 153 |

Other Emulations

The embedded format precedes and follows the commands by two forward slashes:

// (command) //

In order for embedded commands to be recognized as valid commands and not printable data, the line containing the embedded command(s) must begin with a CR control code, contain no other printable characters (control codes such as SP between commands are OK), and end with a CR control code. It is permissible to begin and end the line with CR LF pairs but the LFs (line feeds) will be executed. If the command is not a valid command or does not conform to the embedded format, the characters will be treated as normal printable data and be printed. If the command is valid but cannot be acted on (such as a command to select the envelope feeder when it is not installed) the command will be ignored but not printed.

The individual sections describing the embedded format versions of the commands may show spaces between the characters of the command. These are only for clarity and are not part of the command.

Note:

The embedded commands are not supported by all the escape commands.

All Emulation Commands

| FUNCTION | COMMAND | REMARKS |
|----------------------|---------------------|--|
| All Emulation Change | ESC ~ ESC ~ (n)A | n=1 DEFAULT EMULATION n=2 FX-80 n=3 D630 n=4 HPLJII n=5 IBM PP n=6 IBM GP |

Epson FX-80

The commands available in Epson FX-80 emulation are listed below.

Epson FX-80 Command Codes

| FUNCTION | COMMAND | REMARKS |
|-------------------------------|-----------|--|
| Bell | BEL | |
| Backspace | BS | |
| Cancel | CAN | |
| Horizontal Tab | HT | The maximum HTAB position is subject to current paper width. |
| Line Feed | LF | |
| Vertical Tab | VT | If a request is made for a location outside the printer's logical page, the current page is ejected. |
| Carriage Return | CR | |
| Page End | FF | |
| Condensed Mode ON | SI | Characters are printed at 17.1 CPI (137 characters on one 8-inch line). When current paper size is letter or legal, and print orientation is portrait, 132 characters are printed over a width of 7.7 inches, until left or right margins are specified. |
| Enlarged Mode ON | SO | Characters are printed in double width. |
| Printer Select | DC1 | |
| Condensed Mode OFF | DC2 | |
| Deselect Printer | DC3 | |
| Enlarged Mode OFF | DC4 | |
| Delete | DEL | |
| Enlarged Mode ON | ESC SO | Same as SO. |
| Condensed Mode ON | ESC SI | Same as SI. |
| 1/8" LF Pitch | ESC 0 | |
| 7/72" LF Pitch | ESC 1 | |
| 1/6" LF Pitch | ESC 2 | |
| n/216" LF Pitch | ESC 3 (n) | ($0 \leq n \leq 255$) |
| Italic (Alternate) Mode ON | ESC 4 | Italic font is selected. |
| Italic (Alternate) Mode OFF | ESC 5 | Normal font is selected. |
| Print Code Area Expand | ESC 6 | 80H to 9FH are accepted as character set. |
| Print Code Area Expand Cancel | ESC 7 | ESC 6 setting cancel. |
| Paper Out Detection Disable | ESC 8 | This command is ignored. |

Epson FX-80 Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|---|----------------------|---|
| Paper Out Detection Enable | ESC 9 | This command is ignored. |
| Print Mode Select | ESC ! (n) | ($0 \leq n \leq 63$) |
| Underline Print Mode ON/OFF | ESC - (n) (minus) | n=1, 49 ON n=0, 48 OFF |
| VFU Channel Select | ESC / (n) | ($0 \leq n \leq 7$) |
| Home Head (Printing from left mast to right for 1 line) | ESC < | This command is ignored since it has no print head mechanism. |
| MSB 0 Set | ESC = | |
| MSB 1 Set | ESC > | |
| MSB Control Sequence Cancel | ESC # | |
| Printer Initialize | ESC @ | Print buffer is cleared. All printer status is initialized as the printer is turned ON. |
| Line Space Setting | ESC A (n) | n/72" LF Pitch Setting. ($0 \leq n \leq 85$) |
| Vertical Tab Set | ESC B (n) | ($1 \leq n \leq 254$) Max. 16 positions. |
| Form Length Setting by Number of Lines | ESC C (n) | Form length=line spacing \times n. ($1 \leq n \leq 127$) If a request is made for a specified position outside the printer's logical page, the position is specified to the appropriate logical page limit. |
| Form Length Setting in Inches | ESC C(0) (n) | ($1 \leq n \leq 22$) If a request is made for a specified position outside the printer's logical page, the position is specified to the appropriate logical page limit. |
| Horizontal Tab Set | ESC D (n) | ($1 \leq n \leq 137$) When the specified HTAB position crosses the current paper width, the data is ignored. The maximum tab number is 256. |
| Emphasized Mode Setting | ESC E | Double printing at 2-dot spacing. |
| Emphasized Mode Cancel | ESC F | |
| Double Strike Mode Setting | ESC G | Double printing at 1-dot spacing. |
| Double Strike Mode Cancel | ESC H | |

Epson FX-80 Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|---------------------------------------|-----------|--|
| Control Code Select | ESC I | Undefined codes in the range 00H to 1FH and 80H to 9FH are assigned as character code. n=0, 48 Control code n=1, 49 Printable character |
| n/216" Line Feed | ESC J (n) | $0 \leq n \leq 255$ |
| 8-pin Normal Density Bit Image | ESC K (n) | Prints about 1/5 page without expansion memory. |
| 8-pin Dual Density Bit Image | ESC L (n) | Same as above. |
| Elite Size Mode | ESC M | 12 CPI |
| Perforation Line Skip ON | ESC N (n) | This command is ignored. |
| Perforation Line Skip OFF | ESC O | This command is ignored. |
| Pica Size Mode | ESC P | |
| Right Margin Set | ESC Q (n) | n: depends on print mode. |
| National Character Select | ESC R (n) | $(0 \leq n \leq 10)$ |
| Super/Subscript Mode ON | ESC S (n) | n=0, 48 Superscript n=1, 49 Subscript |
| Super/Subscript Mode OFF | ESC T | |
| One-way Print ON/OFF | ESC U (n) | This command is ignored. |
| Enlarged Mode Set | ESC W (n) | n=1, 49 ON n=0, 48 OFF |
| Double-Speed Double-Density Bit Image | ESC Y (n) | Prints about 1/5 page without expansion memory. |
| Quadruple Density Bit Image | ESC Z (n) | Prints about 1/5 page without expansion memory. |
| VFU Position Set | ESC b (n) | VFU has 8 channels (0 to 7), and for each channel up to 16 positions. |
| Incremental & View Function | ESC i (n) | This command is ignored. |
| n/216" Backward Line Feed | ESC j (n) | $(0 \leq n \leq 255)$ If a request is made for a location outside the printer's logical page, the current cursor position is moved to the appropriate logical page limit. |

Epson FX-80 Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|----------------------------|------------------|--|
| Left Margin Set | ESC l (n) | (1 ≤ n ≤ 137) n: depends on print mode. If a request is made for a specified position outside the printer's logical page, the position is specified to the appropriate logical page limit. |
| P/S Character Print ON/OFF | ESC p (n) | n=1, 49 ON n=0, 48 OFF |
| Half-Speed ON | ESC s (n) | This command is ignored since print head speed is irrelevant. |
| 8-pin Bit Image Mode | ESC * (n) | Prints about 1/5 page without expansion memory. |
| 9-pin Bit Image Mode | ESC ^ (n) | Prints about 1/5 page without expansion memory. |
| Down Load | ESC & (n) | This command is ignored. |
| ROM CG Copy | ESC : | This command is ignored. |
| Down Load Character Select | ESC % 1 | This command is ignored. |
| ROM CG Selection | ESC % 0 | This command is ignored. |
| Paper Source | ESC EM (n) | n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE |
| Paper Size | ESC d (n) | n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP |
| Orientation | ESC VP ESC VL | PORTRAIT LANDSCAPE |

Epson FX-80 Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|--------------|----------------|---|
| Paper Source | //n// | n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE |
| Paper Size | //d (n)// | n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP |
| Orientation | //P// //L// | PORTRAIT LANDSCAPE |

The printable character set for the Epson FX-80 emulation ranges from 20_H to FF_H, within which standard ASCII characters are from 20_H to 7F_H, and italic characters are from A0_H to FF_H.

IBM Proprinter

The printer commands are given in the table below. The ESC 6 code allows access to IBM Proprinter Character Set 2. The ESC 7 code returns back to IBM Proprinter Character Set 1.

IBM Proprinter Command Codes

| FUNCTION | COMMAND | REMARKS |
|-----------------------------|--------------------------|---|
| Cancel | CAN | |
| Condensed mode OFF | DC2 | 10 CPI |
| Enlarged OFF | DC4 | |
| Condensed mode ON | SI | 17.1 CPI (137 characters on one 8-inch line). |
| Enlarged ON | SO | |
| Carriage Return | CR | |
| Printer Select | DC1 | |
| Printer Deselect | DC3 | |
| Page End | FF | |
| Vertical Tab | VT | |
| Line Feed | LF | |
| Horizontal Tab | HT | |
| Backspace | BS | |
| Bell | BEL | |
| Null | NUL | |
| Underline Print Mode ON/OFF | ESC - (n) (minus) | n=1, 49 ON n=0, 48 OFF |
| Overscore Print Mode ON/OFF | ESC _ (n) (underline) | n=1, 49 ON n=0, 48 OFF |
| 1/8" LF Pitch Set | ESC 0 | |
| 7/72" LF Pitch Set | ESC 1 | |
| Start Variable Line Feed | ESC 2 | Execution Command for ESC A |
| n/216" LF Pitch Set | ESC 3 (n) | (1 ≤ n ≤ 255) |
| Set Top of Form | ESC 4 | When this command is received, the page is ended. Data after ESC4 is printed from the top of the next page. |
| Automatic Line Feed | ESC 5 (n) | n=1 CR, LF n=0 CR only |
| Select Character Set 2 | ESC 6 | |
| Select Character Set 1 | ESC 7 | |
| Elite pitch mode | ESC : | DC2 resets to 10 CPI. |

IBM Proprinter Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|--|------------|--|
| Print Continuously from All Characters Chart | ESC \ (n) | (1 ≤ n ≤ 255) |
| Print Single Character from All Characters Chart | ESC ^ (n) | |
| n/72" LF Pitch Set | ESC A (n) | (1 ≤ n ≤ 85) |
| Vertical Tab Set | ESC B (n) | Max. 64 positions. |
| Page Length Set in Lines | ESC C (n) | Form length = Line spacing × n 6 LPI |
| Page Length Set in Inches | ESC C0 (n) | (1 ≤ n ≤ 14) If a request is made for a specified position outside the printer's logical page, the position is specified to the appropriate logical page limit. |
| Horizontal Tab Set | ESC D (n) | When the specified HTAB position crosses the current paper width, the data is ignored. The maximum tab number is 256. |
| Emphasized ON | ESC E | Double printing at 2/300" spacing. |
| Emphasized OFF | ESC F | |
| Double Strike ON | ESC G | Double printing at 1/300" spacing. |
| Double Strike OFF | ESC H | |
| Print Mode Select | ESC I (n) | n=0, Standard font, Normal print n=2, Standard font, Double strike print. |
| n/216" Line Feed | ESC J (n) | (1 ≤ n ≤ 255) |
| 480 Bit-Image Graphics Mode | ESC K (n) | Prints about 1/5 page without expansion memory. |
| 960 Bit-Image Graphics Mode | ESC L (n) | Prints about 1/5 page without expansion memory. |
| Set Skip Perforation | ESC N (n) | This command is ignored. |
| Cancel Skip Perforation | ESC O | This command is ignored. |
| Deselect IBM Proprinter | ESC Q (3) | |
| Set All Tabs to Power On Settings | ESC R | |
| Super/Subscript Mode ON | ESC S (n) | n=0, 48 Superscript n=1, 49 Subscript |
| Super/Subscript Mode OFF | ESC T | |
| Unidirectional Printing | ESC U (n) | This command is ignored. |
| Enlarged ON/OFF | ESC W (n) | n=1, 49 Enlarged ON n=0, 48 Enlarged OFF |

IBM Proprinter Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|--|------------------|---|
| 960 Bit-Image Graphics Mode Normal Speed | ESC Y (n) | Prints about 1/5 page without expansion memory. |
| 1920 Bit-Image Graphics Mode | ESC Z (n) | Prints about 1/5 page without expansion memory. |
| Download | ESC = | This command is ignored. |
| Paper Source | ESC EM (n) | n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE |
| Paper Size | ESC d (n) | n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP |
| Orientation | ESC VP ESC VL | PORTRAIT LANDSCAPE |
| Paper Source | //n// | n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE |
| Paper Size | //d (n)// | n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP |
| Orientation | //P// //L// | PORTRAIT LANDSCAPE |

IBM Graphics Printer

The printer commands are given in the table below. The ESC 6 code allows access to IBM Graphics Printer Character Set 2. The ESC 7 code returns back to IBM Graphics Printer Character Set 1.

IBM Graphic Printer Command Codes

| FUNCTION | COMMAND | REMARKS |
|-----------------------------|----------------------|---|
| Cancel | CAN | Clears the printer buffer. Control codes, except SO remain in effect. |
| Condensed mode OFF | DC2 | |
| Enlarged OFF | DC4 | |
| Condensed mode ON | SI | 17.1 CPI (137 characters on one 8-inch line). |
| Double Width ON | SO | |
| Carriage Return | CR | |
| Page End | FF | |
| Vertical Tab | VT | VT code treated as a LF. |
| Line Feed | LF | |
| Horizontal Tab | HT | |
| Bell | BEL | |
| Underline Print Mode ON/OFF | ESC – (n) (minus) | n=1, 49 Underline mode ON n=0, 48 Underline mode OFF |
| 1/8" LF Pitch Set | ESC 0 | |
| 7/72" LF Pitch Set | ESC 1 | |
| Start Variable Line Feed | ESC 2 | Execution Command for ESC A |
| n/216" LF Pitch Set | ESC 3 (n) | (1 ≤ n ≤ 255) |
| Select Character Set 2 | ESC 6 | |
| Select Character Set 1 | ESC 7 | |
| Paper Out Detection Disable | ESC 8 | This command is ignored. |
| Paper Out Detection Enable | ESC 9 | This command is ignored. |
| Home head | ESC < | This command is ignored. |
| n/72" LF Pitch Set | ESC A (n) | (1 ≤ n ≤ 85) |
| Page Length Set in Lines | ESC C (n) | (1 ≤ n ≤ 127) |
| Page Length Set in Inches | ESC C0 (n) | (1 ≤ n ≤ 22) |

IBM Graphic Printer Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|--|-----------|--|
| Horizontal Tab Set | ESC D (n) | ($1 \leq n \leq 80$) normal mode ($1 \leq n \leq 132$) compressed mode. When the specified HTAB position crosses the current paper width, the data is ignored. The maximum tab number is 256. |
| Emphasized ON | ESC E | Double printing at 2/300" spacing. |
| Emphasized OFF | ESC F | |
| Double Strike ON | ESC G | Double printing at 1/300" spacing. |
| Double Strike OFF | ESC H | |
| Set Variable Line Feeding | ESC J (n) | n/216" Line Feed ($1 \leq n \leq 255$) |
| 480 Bit-Image Graphics Mode | ESC K (n) | Prints about 1/5 page without expansion memory. |
| 960 Bit-Image Graphics Mode | ESC L (n) | Prints about 1/5 page without expansion memory. |
| Set Skip Perforation | ESC N (n) | This command is ignored. |
| Cancel Skip Perforation | ESC O | This command is ignored. |
| Super/Subscript Mode ON | ESC S (n) | n = 0, 48 Superscript mode n = 1, 49 Subscript mode. |
| Super/Subscript Mode OFF | ESC T | |
| Unidirectional Printing | ESC U (n) | This command is ignored. |
| Enlarged | ESC W (n) | n = 1, 49 Enlarged ON n = 0, 48 Enlarged OFF |
| 960 Bit-Image Graphics Mode Normal Speed | ESC Y (n) | Prints about 1/5 page without expansion memory. |
| 1920 Bit-Image Graphics Mode | ESC Z (n) | Prints about 1/5 page without expansion memory. |

IBM Graphic Printer Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|--------------|------------------|---|
| Paper Source | ESC EM (n) | n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE |
| Paper Size | ESC d (n) | n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP |
| Orientation | ESC VP ESC VL | PORTRAIT LANDSCAPE |
| Paper Source | //n// | n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE |
| Paper Size | //d (n)// | n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP |
| Orientation | //P// //L// | PORTRAIT LANDSCAPE |

Diablo 630/630 ECS

The printer commands available in this emulation are given in the table below.

Diablo 630 Command Codes

| FUNCTION | COMMAND | REMARKS |
|--------------------------------------|------------------|--|
| Bell | BELL | |
| Backspace | BS | |
| Carriage Return | CR | |
| Delete | DEL | This command is ignored. |
| Supplementary Character Select | EM | Access for one character selection when in 7-bit ECS mode. |
| Page End | FF | |
| Horizontal Tab | HT | |
| Line Feed | LF | |
| Null | NUL | |
| Shift In | SI | 8-bit ECS mode blanks the character at 80H-9FH. 7-bit ECS mode selects primary character set. |
| Shift Out | SO | 8-bit ECS mode unblanks the character at 80H-9FH. 7-bit ECS mode selects supplementary character set. |
| Vertical Tab | VT | |
| Top Margin Set | ESC T | |
| Bottom Margin Set | ESC L | The specified value of this sequence means the logical page length. |
| Top/Bottom Margin Cancel | ESC C | |
| Left Margin Set | ESC 9 | |
| Right Margin Set | ESC 0 | |
| Horizontal Tab Set | ESC 1 | |
| Horizontal Tab Cancel | ESC 8 | |
| Vertical Tab Set | ESC - (Minus) | |
| All Tab Cancel | ESC 2 | |
| Lines/Page | ESC FF (n) | Page Size=VMI *n |
| Horizontal Movement Index (HMI) Set | ESC US (n) | HMI=1/120" x n (0 ≤ n ≤ 126) |
| Default HMI Select | ESC S | |
| Move to Horizontal Absolute Position | ESC HT (n) | Hpos=HMI x n (0 ≤ n ≤ 255) |
| Auto Backward Print ON | ESC / | This command is ignored due to no mechanical carriage movement. |

Diablo 630 Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|---|-------------|--|
| Auto Backward Print OFF | ESC \ | Same as above. |
| Auto CR/LF ON | ESC ? | |
| Auto CR/LF OFF | ESC ! | |
| Reverse Print ON | ESC < | |
| Reverse Print OFF | ESC > | |
| Backward Print | ESC 6 | Cleared by CR. |
| Forward Print | ESC 5 | |
| Vertical Movement Index VMI Set | ESC RS (n) | $VMI = 1/48" \times n$ ($0 \leq n \leq 125$) |
| Move to Vertical Absolute Position | ESC VT (n) | Not returnable to preceding page due to cut sheet. $VT = 1/48" \times n$ ($0 \leq n \leq 648$) |
| Half Line Feed | ESC U | |
| Backward Half Line Feed | ESC D | Not returnable to preceding page due to cut sheet. |
| Backward Line Feed | ESC LF | Not returnable to preceding page due to cut sheet. |
| Graphic Mode ON | ESC 3 | No print position change after text printing. (Cleared by CR.) |
| Graphic Mode OFF | ESC 4 | ESC 3 mode cancel. Exit plot mode. |
| Red Ribbon Print ON | ESC A | This command is ignored. |
| Black Ribbon Print ON | ESC B | This command is ignored. |
| Print Suppress Start | ESC 7 | Cleared by CR. |
| 20H Code Designation | ESC Y | |
| 7FH Code Designation | ESC Z | |
| P/S Character Print Start | ESC P | |
| P/S Character Print End | ESC Q | |
| Character Spacing Offset Set | ESC DC1 (n) | $Spacing = 1/120" \times n$ ($-63 \leq n \leq +63$) |
| Underline Start | ESC E | |
| Underline End | ESC R | |
| Boldface Overprint ON | ESC O | Double printing at 1-dot spacing. (Cleared by CR.) |
| Shadow Print ON | ESC W | Double printing at 2-dot spacing. (Cleared by CR.) |
| Boldface/Shadow Print OFF | ESC & | |
| Carriage Settling Time Extend | ESC % | This command is ignored. |
| Carriage Settling Time Extend Cancel | ESC N | This command is ignored. |

Diablo 630 Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|-------------------------------|---------------------|---|
| Auto Justify | ESC M | |
| Auto Center | ESC = | Cleared by CR. |
| 1/120" Backspace | ESC BS | |
| Program Mode Select | ESC SO M | This command is ignored. |
| Word Processor Mode Cancel | ESC X | |
| Envelope Feed ON | ESC EM E | |
| Tray 1 Feed ON | ESC EM 1 | |
| Tray 2 Feed ON | ESC EM 2 | |
| Page End Designation | ESC EM R | Causes same operation as FF code. |
| Printer Initialize | ESC SUB I | Power-on initialization. |
| Remote Error Reset | ESC SUB R | |
| Status Byte 1 Request | ESC SUB 1 | In RS-232C I/F mode only. Printer always send NULL(0x00) code to host computer. |
| Status Byte 3 Request | ESC SUB 3 | In RS-232C I/F mode only. Printer always send NULL(0x00) code to host computer. |
| Memory Test Request | ESC SUB SO | This command is ignored. |
| Hy Plot ON (Absolute Move) | ESC G | Cleared by CR. |
| Hy Plot ON (Absolute Plot) | ESC G BEL | Cleared by CR. |
| Hy Plot ON (Relative Move) | ESC V | Cleared by CR. |
| Hy Plot ON (Relative Plot) | ESC V BEL | Cleared by CR. |
| Change Plot Character | ESC. 'character' | |
| Set Plot Precision | ESC hv | |
| Parameter Initialize | ESC CR P | Initialization of print control parameters only. |
| Print Wheel Down Load Mode ON | ESC SO DC2 | This command is ignored. |
| Toggles SRQ Line | ESC CAN | This command is ignored. |
| Remote Print Wheel Selection | ESC SYN (p) | This command is ignored. |
| X-ON/OFF Protocol | ESC GS A | Disables NAK. |
| X-ON/OFF Protocol | ESC GS B | Re-enables NAK. |
| Text Block End | ETX ACK | Only when ETX/ACK hand-shake is designated in RS-232C I/F mode. |

Diablo 630 Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|--------------|--|---|
| Paper Source | ESC EM (n) | n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE |
| Paper Size | ESC d (n) | n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP |
| Orientation | ESC I ESC _ | PORTRAIT LANDSCAPE |
| Select Font | ESC F (n) ESC FI (n) ESC FA (n) ESC FB (n) ESC G (n) ESC GI (n) ESC GA (n) ESC GB (n) | INTERNAL FONT INTERNAL FONT A FONT SLOT B FONT SLOT INTERNAL FONT & ADJUST SPACING INTERNAL FONT & ADJUST SPACING A FONT SLOT & ADJUST SPACING B FONT SLOT & ADJUST SPACING (n) indicates the selected font number. |

Diablo 630 Command Codes (cont)

| FUNCTION | COMMAND | REMARKS |
|--------------|--|---|
| Paper Source | //n// | n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE |
| Paper Size | //d (n)// | n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP |
| Orientation | //// //_// | PORTRAIT LANDSCAPE |
| Select Font | //F (#)// //FI (#)// //FA (#)// //FB (#)// //G (#)// //GI (#)// //GA (#)// //GB (#)// | INTERNAL FONT INTERNAL FONT A FONT SLOT B FONT SLOT INTERNAL FONT & ADJUST SPACING INTERNAL FONT & ADJUST SPACING A FONT SLOT & ADJUST SPACING B FONT SLOT & ADJUST SPACING (#) indicates the selected font number. |

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